Cornell University Library

BOUGHT WITH THE INCOME
FROM THE
SAGE ENDOWMENT FUND
THE GIFT OF
Henry W. Sage
1891

A.197783

ALBERT R. MANN LIBRARY

New York State Colleges
of
Agriculture and Home Economics
at
Cornell University

Cornell University Library
S 562.G7C97 1901

Estate management:a practical handbook f

3 1924 003 331 265 mann

Cornell University Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

http://www.archive.org/details/cu31924003331265

ESTATE MANAGEMENT:

A PRACTICAL HANDBOOK

FOR

LANDLORDS, AGENTS, AND PUPILS.

BY

CHARLES E.dward CURTIS, F.S.I.,

PROFESSOR OF FOREST ECONOMY, FIELD ENGINEERING, AND GENERAL ESTATE
MANAGEMENT AT THE COLLEGE OF AGRICULTURE, DOWNTON, WILTS; CONSULTING FORESTER TO THE RIGHT HONOURABLE LORD O'NEILL,
SHANES CASTLE, ANTRIM; AUTHOR OF "PRACTICAL
FORESTRY" (2ND EDITION), "VALUATION OF LAND
AND HOUSES" (2ND EDITION), &C., &C.

With a Legal Supplement by a Barrister.

FIFTH EDITION.

LONDON:
HORACE COX,
"THE FIELD" OFFICE, BREAM'S BUILDINGS, E.C.

1901.

LONDON:
PRINTED BY HORACE COX, WINDSOR HOUSE, BREAM'S BUILDINGS, E.C.

PREFACE TO THE FIFTH EDITION.

It is nearly twenty-two years since I issued the first edition of this work, and I am now called upon to revise it for the fourth time. It is a great source of pleasure to me to feel that those to whom its pages are addressed have appreciated them, and I trust many beginners in the field of Estate Management have reaped benefit and been assisted by it in their initial efforts. Many of my early readers are now men of ripe experience; and as the work is still enquired for, and no request has reached me for change or modification of my scheme, I may be permitted to indulge in the hope that my labour has not been in vain.

The original lines of study remain unaltered; and, beyond bringing the sections up to date, no effort has been made to enlarge upon or extend the scheme.

I have done my best to deserve well of my readers, and if I have failed in any way, or fallen short of the expectations of those who search my pages, I ask their pardon. I trust, however, that the generation now growing up who have chosen, or may choose, the management of land as their profession will accept this work as a basis of further study, and as a guide to the practice which alone can fit them for their onerous and responsible duties.

CHAS. E. CURTIS.

Woodlands,
Brockenhurst, Hants,
April, 1901.

PREFACE TO THE FOURTH EDITION.

Once again I thank my readers for their constancy in the perusal of my work on "Estate Management," and I ask them again to bestow on this, the fourth edition, the kind reception given in the past.

No effort has been made to change the original scheme of the work, for the very fact of a fourth edition being required proves that the lines laid down in the beginning have met with universal approval. I have endeavoured to bring the whole subject matter up to date, and to set forth various modifications rendered necessary by the vast changes in our agricultural system brought about by foreign competition and social development.

The main principles of management remain unchanged, but circumstances compel us from time to time to relax and modify what were at one time considered absolutely fixed.

My preface to the third edition was full and comprehensive, and there seems no need to repeat what was there clearly expressed.

Since the issue of the third edition, Mr. Scott, of Rotherfield Park, has passed from among us, but I cannot as yet separate his name from a work in which he took so deep an interest, and therefore dedicate this, the fourth edition, to his memory.

CHAS. E. CURTIS.

26, *Gledstanes Road,*
West Kensington, W.
October, 1895.

PREFACE TO THE THIRD EDITION.

I HAVE once more to thank my readers for the kind reception they have given to my work on "Estate Management," and in issuing this, the third edition, I ask them again to favour me with their honest and kindly criticism.

I have endeavoured, whilst retaining the original conception, to bring the work up to date; and to so far modify my opinions and theories as to meet altered circumstances, brought about by the depression, which, it will be remembered, I alluded to in the preface to the second edition.

This depression—instead of passing away and giving place to an era of prosperity, as many then thought likely—has continued, not only without cessation, but with increased pressure, until many hard-working tenant farmers, and landowners too, have been forced to stand on one side, whilst land has been only partially tilled or has passed out of cultivation altogether.

The whole subject, however, of land management remains unchanged so far as the main principles are concerned, but these principles have had to be relaxed and modified to such an extent as to render the old position of landlord and tenant almost a thing of the past.

In some cases the feelings between the two have been so strained as to leave the former a farmer as well as a landowner; in others a "fellow feeling has made them wondrous kind," and the tenants are holding on under lower rents and relaxed conditions of husbandry.

In either case the management has had to be remodelled, and carried out on new lines of economy and thrift.

I cannot help thinking that, where mutual esteem and trust between the owner and the occupier have been cultivated—as I suggested in 1881—the land is in a more productive state, and ready more immediately to respond to liberal treatment when an era of prosperity again asserts itself.

Owing also to this change in rural affairs, owners of land are paying more attention to their woodlands, bestowing that attention upon them which they have long required; and which will no doubt result in an increased revenue. Planting, too, land no longer capable of yielding a profit under the plough, is being considered, and in some cases acted upon. Not being unmindful of this feeling on the part of landowners and land agents, I have very carefully revised and added to my chapters on "Forestry," and I trust my efforts will not be altogether in vain.

I have endeavoured, in laying down what I believe to be the lines of good and enlightened management, tempered with justice to both parties concerned, to keep in view the necessity of upholding contracts freely entered into, of maintaining the fertility and condition of the soil, by encouraging the expenditure of tenants' capital by the giving of fair and reasonable compensation for improvements, apart from the operations of the Agricultural Holdings Act of 1883; and by the exaction of such a rent only as the farm is capable of yielding; and by the relaxation of stringent covenants.

To pupils—to whom this work is partially addressed—I have endeavoured to point out the manifold points of practice which occur in the experience of the land agent, and to explain each point in detail; and I trust it may lighten their labours, and render a wide, and somewhat complicated, subject clear and practicable. I would impress upon them the necessity of sparing no pains to acquire a full knowledge of the true principles of Estate Management, which, coupled with experience, will fit them for their now arduous duties.

I have pleasure in thanking W. Carruthers, Esq., F.R.S., for his valuable assistance in the nomenclature of the blights which affect our cereals; and to express my indebtedness to M. Des Cars for the engravings—Figs. I., II., III., and IV., pages 98-101, which I have extracted from his valuable little work on "Tree Pruning." They are not exact copies, but have been modified to meet my views by my daughter.

The chapter on "Geology" written by my father, the late William Curtis of Alton, I have not altered in any way, as it admirably conveys the knowledge intended. The legal supplement, so ably written by my brother-in-law, the late Frederick Green, M.A., of the Chancery Bar, has been simply brought up to date; its lines, which are most clear and concise, have been left unchanged.

In conclusion, I submit my work to the landowners and professional men of the kingdom with a full assurance that they will give me credit for doing my best to elucidate what, owing to the long-continued depression, has become somewhat complicated and obscure.

CHAS. E. CURTIS.

6, *Baron's Court Road, S.W.*,
January, 1889.

PREFACE TO THE SECOND EDITION.

THE encouragement bestowed upon my efforts to make the management of landed property a subject of methodical study having resulted in a demand for a second edition of the handbook published two years ago, I am glad to take this opportunity of acknowledging the kindness with which those efforts have been received.

The work has now been revised and added to; and, though the original text has not been materially altered, it has been so far modified and corrected as to bring it up to the present date.

It is no longer possible, under existing circumstances of agricultural depression, to manage estates on the old and well-worn lines; new lines, still running in grooves of kindly sympathy and forbearance, but nevertheless adhering more distinctly to fixed economic principles, seem to me to be the natural outcome of this new order of things.

The great aim to be kept in view in the management of an estate is the cultivation of a feeling of mutual esteem and trust between the owner and the occupier; to justify the latter in the expenditure of his capital by well-considered compensation covenants, and to secure to the former a continued fertility of the soil. This can only be arrived at by the aid of enlightened advice of practical men specially educated for the purpose.

In these efforts I have been again assisted by my brother-in-law, Mr. Frederick Green. The legal portions of the work—not only the supplement, but the arrangement of the chapter on Letting and Leases—have emanated from him. My thanks are due to him for this assistance, and for his careful revision of much of my manuscript.

C. E. C.

" *Deanyers,*" *Alton, Hants,*
November, 1881.

PREFACE TO THE FIRST EDITION.

In order to obtain the necessary knowledge for the good conduct of an estate, it is now generally admitted that a thorough and complete course of study must be undertaken. During an experience of several years of the requirements of those engaged in such study, I have found the want of a practical handbook which should place before them an outline of the various branches of estate management. The following pages are an attempt to supply that want.

Whilst endeavouring to treat of every important branch of work connected with the management of an estate in an agricultural district, I have not aimed at exhaustive and elaborate discussion. Such a mode of treatment would have tended to repel, instead of attracting the persons to whom the book is primarily addressed. If I have succeeded in putting before the pupil such an outline of the matters with which he must be acquainted as shall induce him to take a more intelligent interest in his work and to study other treatises upon the different branches of it, my object will have been attained. He who intends to qualify himself for such interesting and responsible work as the care and oversight of landed property must, in these days of keen competition, give up the idea that he need only abandon himself to the pleasures of a country life, and that all needful information will be picked up by the way. An out-of-door life he can, and should have; but it must be a life of practical observation, and of observation directed to its object by such a knowledge of principles as is only to be obtained by a study of books.

But, although my principal object has been the one thus indicated, I trust that the work may be found to be of a sufficiently practical character as to make it of some service to the profession generally.

In conclusion, I have to express my thanks to my friend and brother-in-law, Mr. Frederick Green, M.A., of the Chancery Bar, who, during a leisure enforced by ill-health, has kindly prepared for me some chapters upon the law relating to estates and estate agents. I have also to thank my father, William Curtis, of Alton, for the section relating to Geology.

C. E. C.

"Deanyers,"
Farringdon, Alton, Hants,
1879.

TABLE OF CONTENTS.

CHAPTER I.

LETTING AND LEASES.

SECTION 1.

Introductory Remarks.

Page
Landlords and farmers 1
General duties of land agent in selecting a tenant 3
Fixing the rent 3
Fictitious rents 4
Making terms with the tenant 4

SECTION 2.

The Form of the Lease.

Example A.. Agricultural lease by deed for a term of years from Michaelmas 6
Leases when a deed is not necessary 14
Example B : Agricultural lease by memo. of agreement from year to year from Lady-day 15
Agreement to grant or accept leases 22

SECTION 3.

The Subject Matter of the Lease.

Analysis of contents of lease 22
Name and description of farm 25
Trees and underwood 25
Game 25
Minerals 27
Payment of rent 29
Rates and taxes 30
Tithe rentcharge 33
Repairs 41
Insurance 42

Page
Cultivation 44
Consumption of hay, straw, &c. 46
Compensation and rights of lessee at expiration of term 47
Lessor's power of re-entry 49

SECTION 4.

Compensation for Unexhausted Improvements.

Agricultural Holdings Act, 1883 50
Erection of buildings 52
Laying down of permanent pasture 54
Making and planting osier beds 55
Planting hops 55
Reclaiming waste land 56
Chalking land 57
Claying land 57
Clay burning 58
Boning land 59
Liming land 61
Consumption of cake and other purchased food 62
Application of artificial manures 65
Advice to land agents 65
Scales of valuation 66

CHAPTER II.

FARM VALUATIONS.

SECTION 1.

Valuation Generally.

Valuation from outgoing to incoming tenant 69
Valuers, their appointment and procedure 71
Valuation of tillages 73
Allowance of rent, rates and taxes 75
Michaelmas valuations 75
  Growing corn 76
  Root crops 76
  Preparation for wheat:
    Fallows 77
    Clover leys 78
  Clover and grass seeds 78
  Straw and hay 79
  Farmyard dung 80
Lady-day valuations 81
  Half tillages 82
  Wheat crop 83
  Seeds 83
  Sainfoin roots 83
Survey of dilapidations 85
Fixtures 85

SECTION 2.

Page
Rules for ascertaining weights of hay and cattle and contents of ash heaps 86

SECTION 3.

Forms of valuation........ 91

CHAPTER III.

FORESTRY.

SECTION 1.

Timber and Timber-like Trees, their Propagation, Treatment, and Uses.

Oak 98
Elm 109
Wych elm 111
Ash 112
Beech 114
Horse chestnut 117
Spanish chestnut 119
Walnut 120
Poplar 122
Birch 123
Alder 125
Lime........ 126
Sycamore........ 128
Plane 130
Willow........ 132
Osier........ 134
Elder 135
Hornbeam 136
Trees grown principally for ornament........ 138

SECTION 2.

The Coniferæ, or Cone-bearing Trees, their Propagation, Treatment, and Uses.

Larch 141
Scotch fir........ 146
Common or Norwegian spruce........ 150
Common silver fir 153
Other ornamental conifers 155

SECTION 3.

Timber Measurement.

Measurement of standing timber........ 157
Measurement of sawn timber 160

Page
Summary of rules with examples 161
Instruments used in timber measurement 163
Sliding rule, its description and use 164

Section 4.

Sale of Timber.

Sale by public auction 167
Sale by bill of exchange 169
Sale by tender 173
Private sale 174

CHAPTER IV.

UNDERWOOD.

Section 1.

Underwood and its Management.

Underwood as a source of income 176
Sale of underwood 177
Cutting and sorting underwood 178
Time for cutting underwood 179
Underwood in the hands of a tenant 179
The planting and protection of underwood 180
Tables for calculating number of plants required for planting different areas 182

Section 2.

Plants Suitable for Underwood.

Hazel 183
Sweet chestnut 185
Ash 185
Oak 186
Maple 186
Willow 187
Beech 187
Birch 187
Other varieties 187

CHAPTER V.

FENCES.

Section 1.

Fences, their Varieties and General Management.

Economy of good fences 188
Planting of new hedges, preparation of bed 189
Time and mode of planting 190
Management of old quick hedges 191

Page
Grubbing hedges 192
Trimming hedges 192
Practical hints as to hedges generally 193
Dead fences of different kinds 194
  Post and rails 194
  Park paling 195
  Scotch fence 195
  Other kinds of wooden fences 196
  Wire fencing 196
  Continuous iron fencing 197
  Walls 197
Tables for calculating the number of plants requisite for planting 199

Section 2.

Plants suitable for Fences.

Common thorn 200
Beech 202
Hornbeam 203
Holly 203
Furze 205

CHAPTER VI.

GRASSES SUITABLE FOR WOODS AND PLANTATIONS.

Selection of seeds 207
List of useful grasses 207
Mode of sowing 208
Treatment of rides in woods 209

CHAPTER VII.

THE HOME FARM.

Land agent's relation to the home farm 210
Experiments on the home farm 211
The bailiff and his duties 212
Labourers 214
Annual valuation 216
Supply of produce to the house 216
Live stock—
  Dairy cows 217
  Fat stock 219
  Store and young stock 220
  Sheep 221
    Lambing 223
    Sheep feed 224

Page
Live stock (*continued*)—
  Horses ... 225
  Pigs ... 229
  Poultry ... 229
Farmyard manure ... 230
Seeds ... 235
Hay ... 236
Harvest ... 238
Laying down permanent pastures ... 239
Cultivation of hops ... 244
Making of ensilage ... 256
Implements ... 260
Ear-marking cattle for purposes of registration ... 261
Top-dressing experiments upon grass land ... 263

CHAPTER VIII.

REPAIRS AND MATERIAL.

Repairs generally, clerk of the works ... 267
New erections, farm buildings, tanks, cottages ... 268
Material, timber, and mineral substances ... 274
Utility of geological knowledge ... 274
Granite ... 279
Trap or greenstone ... 279
Slates ... 279
Sandstone ... 280
Limestone ... 281
Malm rock ... 284
Chalk and lime ... 284
Sand ... 287
Mortar ... 288
Cement ... 288
Concrete ... 289
Bricks and brickmaking ... 290
Tiles ... 294

CHAPTER IX.

REPAIRS AND MATERIAL (*continued*).

RULES FOR ESTIMATING AREAS AND CAPACITIES.

Area of barge roof ... 296
  Hipped roof ... 297
  Circular roof ... 297
Area of brickwork ... 299
Capacities of tanks ... 300
Examples ... 300

CHAPTER X.

THE BLIGHTS OF WHEAT AND OTHER CEREALS.

Page
Tylenchus tritici, "burnt corn," or "earcockles" ... 301
Cecidomyia tritici, "wheat midge" ... 302
" *destructor*, "Hessian fly" ... 302
Ustilago carbo, "smut" ... 303
Tilletia caries, "bunt" ... 303
Uredo Linearis, "red grass" ... 304
Puccinia graminis, "mildew" ... 304
Claviceps purpurea, "ergot of rye" ... 306

CHAPTER XI.

ACCOUNTS.

SECTION 1.

Farm Accounts.

Accounts kept by bailiff ... 308
  Journal ... 308
  Cash book ... 308
  Labour book ... 309
Inspection by agent ... 309
Agent's ledger ... 309
Farm balance sheet ... 310

SECTION 2.

Estate Accounts.

Clerk of works' account ... 312
Forester's account ... 312
Agent's estate accounts ... 314

CHAPTER XII.

USEFUL RULES OF ARITHMETIC AND MENSURATION, 315

ESTATE MANAGEMENT.

CHAPTER I.

LETTING AND LEASES.

SECTION I.

Introductory Remarks.

LANDLORDS AND FARMERS—GENERAL DUTIES OF LAND AGENT IN SELECTING A TENANT—FIXING THE RENT—FICTITIOUS RENTS—MAKING TERMS WITH THE TENANT.

Landlords and farmers.

One of the striking characteristics of our English social system is the distinction, so generally prevalent that it is frequently regarded as a part of the natural order of things, between landlords and farmers. The owner of the land scarcely ever farms it, which is the same thing as saying that the person who does farm it is scarcely ever the owner. Whether this fact is due to the inevitable operation of the land laws, or of some special tendency or economical force which prevents the same person from being at once the owner of the soil and the possessor of the skill and capital necessary to develop it, we need not now inquire, although it may be observed, in passing, that the latter cause is the more probable. For the person possessing the requisite skill to conduct successful farming operations, requires, and ought to have, a large return on his capital and industry which he is obliged to employ and to risk. Assuming that he has such a return, he will probably decrease it by investing part of that capital in the purchase of the soil, because the soil is generally bought up by persons in a position which enables them to give such a price for it that it will, as an investment, yield only a very small return; consequently, their competition will prevent the farmer from obtaining it at a price which will make it for him a remunerative purchase. And, if it is thus clear that there are obstacles in the way of the farmer becoming a proprietor, it is equally clear that there are causes which prevent the proprietor from becoming a farmer.

In the first place, his education does not specially fit him for the work, and, in the second place, the amount of ready money required is often beyond his reach, in spite of the position of apparent wealth which he occupies. The natural course for him to adopt is to insure the proper cultivation of his land by letting or "leasing" it to another—in other words, by parting temporarily with the possession, reserving to himself a "rent" or sum of money for the privilege granted.

The foregoing remarks were correct up to the year 1882, but, owing to the long continued depression in all agricultural operations, the whole land system has undergone a change, and much that is embodied in the principles enunciated has been greatly modified. Whether the modifications may be said to have completely and permanently changed our rural system remains to be proved. That landowners are now farming extensively is a fact beyond dispute, and that their so doing is owing to circumstances over which they have had but slight control is also evident. Whether, however, this will continue in the face of renewed prosperity is a matter of some doubt. Probably, with prosperity assured, the old lines of landlord and tenant would be revived, because the economic principles underlying the system of a twofold interest are sound, and a departure from these principles on any large scale would result in a financial blunder. To induce the land to yield its fullest increase requires the expenditure of skill and capital, and to invest a portion of this capital in the purchase of the land which might yield from 2½ to 3 per cent. would be to cripple the cultivator, and compel him either to reduce his area under cultivation or to limit his operations.

General duties of land agent in selecting a tenant.

The "letting" of land, then, forms the most important and responsible of all acts of the land agent. It is, in fact, what answers to the investment of an employer's capital, and it is as necessary to the proprietor that his land should be let at a full rental to responsible persons, who will make the most of it, as that his money should be invested at good interest and on good security.

It is the part of the land agent to obtain a person capable of fulfilling the duties requisite to the full development of the land; and he must select a man with a thorough knowledge of agriculture, with sufficient capital, and also a man of sound moral character. These qualities are absolutely necessary to bring about a satisfactory arrangement between the parties.

Fixing the rent.

It will also be the duty of the land agent to advise his employer with reference to the amount of the rent which is to be asked for the land. Rent is the annual sum made payable to the landlord by the terms of the lease or agreement. Speaking generally, a fair rent is that amount of money which the tenant should have in his hands after deducting from the receipts of the farm the expenditure—such expenditure including a fair interest upon the tenant's capital, and a reasonable remuneration for his skill and labour. But what is considered to be a fair rent for any particular farm is a matter which will have to be determined by the special circumstances of the case. The demand for farms constitutes the principal of these; there are also the sporting rights connected with the land or the district, the proximity to railways and other means of transit, to towns or schools, and many other circumstances of a like modifying character.

"Fictitious" rents.

When these modifications are pressed too far, to the disadvantage of the tenant, the rent becomes "fictitious," and it is such a pressure which a wise land agent will endeavour to avoid. "Rack rent" is the full rent, *i.e.*, the highest rent which the land will yield, after allowing the tenant a fair return, taking seasons into consideration. A rent beyond this is "fictitious." When fictitious rents are sought for, the landlord's property is unsafely dealt with; indeed, in some respects, his position may then be compared to that of a capitalist whose property is invested in risky securities. Not only does he run the risk of non-payment of his rent, but he also must be prepared to see his property depreciate, the land becoming less productive by over and injudicious cropping. These fictitious rents are, however, very tempting to needy landlords, and are often willingly asked, when the farm in question presents some unusual attraction. As a rule, however, they lead to disappointment, and ultimate loss. Consequently, the influence of the land agent should be used in favour of asking such a rent as the land will fairly produce, taking into consideration adverse seasons and losses. If this is done, the rent may be looked upon as a permanent income; and to secure this permanence of his income, a landlord may well be satisfied with a somewhat lower rent.

These dicta have been fully supported during the years which have elapsed since they were penned. The whole subject of rent has been so completely revolutionised that little remains beyond the rent obtainable under the true definition here given, that is, the amount remaining in the hands of the tenant after deducting from the receipts of the farm the expenditure. This has been, too often, *nil.*

Making terms with the tenant.

The novice in his profession, who has found a tenant willing to give the required rent, and fulfilling the conditions already referred to, may, perhaps, think that his work is done, and that he can leave the preparation of the necessary formalities in the hands of the solicitor. But no mistake can be greater. For the agent should be able, not merely to criticise and to amend, by his suggestions, the draft agreement or lease submitted to him by the solicitor, but he should possess such a knowledge of the form and usual contents of an agricultural lease as to be himself able to draw up, out of his own head, a memorandum which shall express all the material part of the stipulations and covenants which are to be inserted in the lease. We should be the last to advise him to dispense with legal assistance in the granting of leases, or to commit himself or his employer unnecessarily by the signature of informal agreements. But it may be often necessary to bind the intending tenant by obtaining his signature to a memorandum containing the heads of the proposed lease when there is neither the opportunity nor the desire to refer to a solicitor; and in any case, unless he has the matter so thoroughly at his fingers' end that he can discuss in the first instance with the applicant the leading provisions which he intends to have inserted in the lease, he may probably experience the annoyance of finding, when the negotiation is far advanced, that there is such a material difference between the views of the parties as to necessitate concession on his part or the breaking off the arrangement. The student who thoroughly familiarises himself with such simple legal principles affecting this matter as are contained in the supplement will be at a great advantage; for such a knowledge will materially assist him by informing him how far he may rely upon the law of tenancy, and how far it is necessary to protect the landlord by contract.

SECTION II.

THE FORM OF THE LEASE.

EXAMPLE A. (AGRICULTURAL LEASE BY DEED FOR A TERM OF YEARS FROM MICHAELMAS)—LEASES WHEN A DEED IS NOT NECESSARY—EXAMPLE B. (AGRICULTURAL LEASE BY MEMORANDUM OF AGREEMENT FROM YEAR TO YEAR FROM LADY-DAY)—SUPPLEMENTAL AGREEMENT FOR COMPENSATION OF OUTGOING BY INCOMING TENANT—AGREEMENTS TO GRANT OR ACCEPT LEASES.

CHAP. I. Sect. 2. *The Form of the Lease.*

BEFORE making any observations upon the different subjects to which the lease relates, we would ask the student's attention to at least one of the examples of leases given in this section. Familiarity with the form and substance of a single good example will do more to enlighten him than any amount of general observation. We shall proceed in the first place to give *in extenso* the lease of a farm which was carefully considered, and which, after it was settled for us by counsel, appeared to be a clear and useful form.

In the books upon the subject shorter forms may be found, but for the purposes of study it seems better to select an example in which may be read a plain and full expression of a farming agreement; and to give in the form of marginal notes an outline of its terms. This outline will serve as a basis for such general remarks upon the subject-matter of leases as will be made in the next section.

EXAMPLE A.

AGRICULTURAL LEASE BY DEED FOR A TERM OF YEARS FROM MICHAELMAS.

1. Date and parties.

THIS INDENTURE, made the day of 19 between Abraham Broadacres, of in the parish of in the county of , Esquire (hereinafter called "the Lessor") of the one part, and Charles Diggins, of in the parish of in the county of . Farmer (hereinafter called "the Lessee") of the other part, WITNESSETH, that in consideration of the rents hereinafter reserved, and the covenants by the lessee hereinafter contained, THE LESSOR doth by these presents GRANT AND DEMISE unto the lessee, his executors, administrators, and assigns, ALL that messuage or farmhouse, and the several lands and hereditaments specified in the first schedule hereto situate in the parish of in the county of containing in the whole 500 acres, or thereabouts, known as Blackacre Farm, together with all rights, easements, and appurtenances thereto belonging, or usually held and enjoyed therewith, EXCEPT AND RESERVING unto the lessor, his heirs and assigns, all timber and other trees, and wood, and (save as to the underwood mentioned in the second schedule hereto) all underwood which are, or is, or during the term hereby granted shall be, upon the said premises, with liberty for the lessor, his heirs and assigns, and all persons authorised by him or them, at all seasonable times during the term hereby granted, with or without horses, carts, and carriages, to enter upon the said premises, and every part thereof, and dig, cut, fell, top, stub up, convert, and carry away the said timber trees, wood, and underwood, and to do all acts necessary or convenient for any of those purposes, and, in particular, to have sufficient and convenient ground and room for laying down and stacking such timber, trees, wood, and underwood. AND ALSO EXCEPT AND RESERVING unto the lessor, his heirs and assigns, all the game, woodcock, snipe, quail, landrail, rabbits, wild fowl, and fish, upon the said premises, with liberty for him and them, and all persons authorised by him and them, at all times during the term hereby granted, to enter and be upon the said premises for the purpose of hunting, sporting, and killing, or taking such creatures as aforesaid, and for all other reasonable purposes in connection therewith, but without prejudice to the statutory right to kill and take ground game which the lessee will have as incident to and inseparable from his occupation of the said premises. TO HAVE AND TO HOLD the said premises hereinbefore expressed to be hereby demised unto the lessee, his executors, administrators, and assigns, for the term of seven years from the 29th day of September, 1900, YIELDING AND PAYING therefor during the said term the yearly rent of 500*l.* by equal quarterly payments, on the 25th day of December, the 25th day of March, the 24th day of June, and the 29th day of September in every year, the first payment to be made on the 25th day of December, 1900, and the last payment to be made in advance on the 24th day of June next preceding the determination of the term; AND ALSO YIELDING AND PAYING by like quarterly payments the additional yearly rent of 50*l.* for every acre (and so in proportion for a less quantity) of land which being now meadow or pasture, shall, without the previous consent in writing of the lessor, his heirs or

2. Demise of described farm.

3. Exception of trees and underwood, with liberty to lessor to enter and fell.

4. Exception of game, with liberty to lessor to sport.

5. *Habendum* defining the length of the term.

6. *Reddendum* or reservation of certain annual rent.

7. And of penal rent for breaking up pasture.

assigns, be broken up or converted into tillage, the said additional rent to be computed from such one of the said quarterly days of payment as shall immediately precede the period when such breaking up or conversion shall occur, and so that the first payment thereof shall be made on such of the said quarterly days of payment as shall next follow the same period, and to continue payable during the residue of the said term, and the last payment thereof to be made in advance on the said 24th day of June next preceding the determination of the term*; AND ALSO YIELDING AND PAYING, in the event of and immediately upon the said term being determined by re-entry under the proviso hereinafter contained, a proportionate part of the said several rents for the fraction of the current quarter up to the day of such re-entry, the said several rents to be paid clear of all deduction except land tax and property tax. AND THE LESSEE DOTH hereby, for himself, his heirs, executors, administrators, and assigns, COVENANT with the lessor, his heirs and assigns, that he the lessee, his executors, administrators, and assigns, will pay unto the lessor, his heirs and assigns, the said yearly rent of 500*l.*, and also, if the same shall become payable, the said additional yearly rent and the aforesaid proportionate parts of the same rents at the times and in the manner hereinbefore appointed for payment thereof respectively, clear of all deductions except as aforesaid; AND ALSO will during the said term pay all existing and future taxes, rates, assessments, and outgoings of every description (except land tax and property tax) for the time being payable either by landlord or tenant in respect of the said premises; AND ALSO will, throughout the said term, at his or their own expense, and without being thereunto required by notice, well and sufficiently repair, maintain, scour, cleanse, and keep in good and tenantable repair the said messuage or farmhouse, and all stables, drains, sheds, cottages, and other buildings hereby demised, and all fences (live or dead), walls, rails, gates, stiles, drains, ditches, banks, bridges, watercourses, and appurtenances for the time being upon or belonging to the said premises; AND particularly will, at or before the expiration of the third and sixth years of the said term, in a workmanlike manner limewash all such parts of the interior of the said premises as have before been limewashed; AND will, at or before the expiration of the third and sixth years of the said term, in like manner paint with two coats of good oil paint all the external wood, iron, and other work of or connected with the said premises previously or usually painted, or which ought to be painted, and will once at least during the said term in like manner paint with two coats of good oil paint all the internal wood, iron, and other work of or connected with the said premises previously or usually painted, or which ought to be

8. And of proportionate part of rents in case the lease is determined between two quarter days.

9. Lessee covenants to pay rent.

10. And to pay rates and taxes.

11. And to repair.

12. And particularly to limewash.

13. Paint externally and internally.

---

* *See* Agricultural Holdings Act, 1900, *re* penal rents, *post.*

painted; AND will once at least during the said term tar over in a workmanlike manner with good tar all the external woodwork of or connected with the said premises previously or usually tarred; AND ALSO shall and will permit the lessor, his heirs and assigns, and his and their agents, servants, and workmen, twice, or oftener, in every year during the same term to enter into and upon the said premises or any part thereof to view the condition of the same, and of all defects and wants of repair then and there found, to give or leave notice in writing at or upon the said premises, or some part thereof, for the lessee, his executors, administrators, or assigns, to repair the same within three calendar months from the day of such notice, within which said time the lessee, his executors, administrators, or assigns, will repair the same accordingly*; AND ALSO shall and will, in case of non-compliance with such notice within the said three calendar months, permit the lessor, his heirs and assigns, and his and their agents, servants, and workmen, to enter upon the said premises and execute the required repairs; AND ALSO shall and will pay the amount of the expenses of such last mentioned repairs on the quarterly day of payment of rent next after the same shall have been completed; and in default thereof the amount of the said expenses may be recovered by the lessor, his heirs and assigns, by distress in the same manner as rent in arrear is recoverable; BUT SO THAT the liability of the lessee, his executors, administrators, and assigns, under the aforesaid covenants, to repair, maintain, limewash, paint, and tar, shall, if he or they shall give reasonable and timely notice in writing to the lessor, his heirs and assigns; of the materials requisite to enable him or them to perform the same, be conditional on the lessor, his heirs or assigns providing and allowing at the expense of the lessor, his heirs or assigns, at any place upon the said premises, or within a distance of seven miles therefrom, all such converted timber, bricks, slates, tiles, lime, paint, and tar, as may be sufficient for the purposes aforesaid, all such timber and other materials as aforesaid to be cut and carried to such place at the expense of the lessor, his heirs and assigns; AND SO THAT the lessee, his executors, administrators, and assigns, shall not be liable under the aforesaid covenants to repair, to make good any damage by fire or tempest when the cost of such repair and making good shall (exclusive of the cost of materials) exceed the amount of 40*s.*; AND ALSO shall not, nor will, assign, underlet, or otherwise part with the possession of any part of the said premises without the previous licence in writing of the said lessor, his heirs or assigns; AND ALSO shall and will, throughout the said term, manage and cultivate the said farm and lands in a good and husbandlike manner according to the custom of the country in reference to farms of a

14. And tar necessary woodwork.

15. And to permit lessor to enter to view and give notice of repairs needed, which repairs may be executed by the lessor at the lessee's expense if the notice is not complied with within three calendar months.

16. Liability of lessee in respect of repairs to be conditional on lessor supplying materials specified.

17. Liability of lessee in respect of repairs not to extend to cases of damage by fire or tempest exceeding 2*l.*

18. Lessee further covenants not to assign or underlet without licence.

19. And to cultivate in a husbandlike manner according to the custom of the country.

---

* *See* Agricultural Holdings Act, 1900, *post.*

like nature, except so far as hereby varied, and not impoverish any part thereof; AND ALSO shall not, nor will, during the said term, without the previous consent in writing of the lessor, his heirs or assigns, break up or convert into tillage any land which is now meadow or pasture; AND ALSO shall and will lay out a sum of money equal to the manurial value of the hay and straw, produced on the holding, and sold off, in the purchase of oil or cotton cakes, or artificial manures, and will produce on each of the said quarter days, or so soon thereafter as thereunto required, a properly vouched account of all moneys expended in purchase of oil or cotton cake, or artificial manure, and an account of the sale of hay or straw during the then preceding quarter; AND ALSO shall not, nor will, sell any part of the hay or straw of the last crop preceding the expiration of the said term; AND ALSO shall and will spend and consume on the said premises all oil and cotton cake and artificial manure so purchased, and also all hay and straw produced on the said premises, which shall not be sold, including a sufficient part of the hay and straw of the last crop preceding the expiration of the said term, and also all roots and green crops or fodder produced thereon; AND ALSO shall and will, at all proper times, and in a husbandlike manner, lay and spend upon the lands hereby demised all the dung, muck, and compost produced on the said premises; AND ALSO shall and will preserve all timber and other trees, woods, and saplings, and all underwood (save and except the underwood mentioned in the second schedule hereto) from being cut, injured, or destroyed; AND ALSO shall and will keep properly clean all the watercourses, ditches, under-drains, and outfalls on the said premises; AND ALSO shall and will permit the lessor, his heirs and assigns, and his and their agents and stewards, at all reasonable times during the said term, to enter upon the said premises to examine the state and condition thereof, and to exercise the rights, liberties, and privileges hereinbefore expressed to be reserved; AND ALSO shall and will warn off all persons who, during the said term, shall hunt, hawk, shoot, fish, or sport upon the said premises without the licence of the lessor his heirs or assigns, other than any person or persons entitled to kill and take ground game in exercise of the lessee's statutory right hereinbefore mentioned; AND ALSO shall and will permit the lessor, his heirs and assigns, in case any person or persons (other than any such person or persons as aforesaid) shall, during the said term, hunt, hawk, fish, shoot, or sport upon the said premises, to bring and prosecute any action or other proceeding against such person or persons in the name or names of the lessee, his executors, administrators, or assigns, and will not release or discharge any such action or proceeding if he or they are indemnified from the costs thereof without the written consent of the lessor, his heirs or assigns; AND ALSO shall and will, at the expiration or other determination of the said term, deliver up the said premises and

20. And not to break up pasture.

21. And to lay out manurial equivalent in purchase of cake and manure, and produce accounts.

22. And not to sell hay or straw of last crop.

23. And to consume all cake, &c., and also all unsold hay and straw, and also all other fodder on the premises.

24. And to expend on the premises all the dung there produced.

25. And to preserve all trees and underwood.

26. And to cleanse ditches.

27. And to permit lessor to enter to view condition of premises.

28. And to warn off poachers.

29. And to permit lessor to sue poachers in name of lessee.

all additions thereto, together with all fixtures, fences, walls, rails, gates, stiles, drains, ditches, banks, bridges, and watercourses for the time being upon or belonging to the said premises, except such fixtures and buildings as the lessee, his executors, administrators, or assigns, shall be entitled to remove under or by virtue of any Act of Parliament applicable to these presents, and which the lessor, his heirs or assigns, shall not have elected to purchase, in such good and tenantable repair as aforesaid, and in all respects in such state and condition as shall be consistent with the due performance of the several covenants hereinbefore contained; AND ALSO shall and will leave upon the said premises at the expiration of the said term carefully stacked and thatched all unconsumed straw of the last preceding crop of corn, grain, or pulse that shall have been thrashed out prior to the expiration thereof, and also all unconsumed hay of the last preceding crop, such straw or hay to be paid for by the lessor, his heirs or assigns, or by the incoming tenant by valuation to be made by two valuers or their umpires in the usual way; AND ALSO shall and will, as to so much of the said last preceding crop of corn, grain, or pulse as shall not have been thrashed out prior to the expiration of the said term, thrash out the same in the said barns before the 6th of May next ensuing after the expiration of the said term, having accommodation allowed to him or them for that purpose in accordance with the covenant in that behalf hereinafter contained, and will permit the lessor, his heirs or assigns, or the incoming tenant, to stack and take the straw hulls, chaff, and other litter and fodder therefrom, the same to be paid for by valuation as hereinbefore mentioned; AND ALSO shall and will leave upon the said premises all the muck, dung, and compost produced upon the said premises and then unconsumed, without receiving any compensation for the same. AND THE LESSOR for himself, his heirs, executors, and administrators, doth hereby covenant with the lessee, his executors, administrators, and assigns, that the lessee, his executors, administrators, and assigns, paying the said yearly rents and performing all the covenants and agreements by the lessee herein contained, may quietly hold the said premises during the said term, and may also hold the barns and stackyards for the laying, thrashing, and dressing of his or their last crops, and the said messuage or farmhouse, and also stabling or standing room for four horses, until the 6th of May next ensuing after the expiration of the said term without paying any rent for the same. AND ALSO that if the said messuage, farmhouse, stables, barns, sheds, cottages, and buildings, or any of them, or any new buildings or erections which shall be built or erected in lieu thereof, shall at any time during the said term be destroyed or damaged by fire, except by the wilful act, neglect, or default of the lessee, his executors, administrators, or assigns, then and so often as the same shall happen and within a reasonable time, not exceeding one year thereafter, the lessor, his heirs or assigns, will at his or their own cost

30. And to deliver up the premises at the end of the term in good repair.

31. And to leave on the premises at the end of the term unconsumed straw of last crop (if already thrashed), and unconsumed hay, to be paid for by lessor or incoming tenant, at a valuation.

32. And to thrash out the whole of the last crop by the 6th May next after the expiration of the term, having accommodation allowed him for the purpose, straw to be paid for in like manner.

33. And leave dung upon premises without compensation.

34. Lessor covenants for quiet enjoyment during term, and to allow use of messuage, barns, and stackyards up to succeeding 6th May.

35. And to rebuild in case of fire.

sufficiently rebuild, restore, or repair and complete the premises which shall be so destroyed or damaged except as aforesaid, or except the damage be of such small amount that the lessee, his executors, administrators, or assigns, is or are bound to make good the same in accordance with the covenants by the lessee hereinbefore contained; AND ALSO that the lessor, his heirs and assigns, shall and will throughout the said term, on the receipt of reasonable and timely notice in writing of the materials requisite for the performance of any repairing, limewashing, painting, or tarring, in accordance with the covenants by the lessee hereinbefore contained, provide and allow on any part of the said premises, or within a distance of seven miles therefrom, all such converted timber, bricks, slates, tiles, lime, paint, and tar, as may be sufficient for the purposes aforesaid; AND ALSO that at the expiration of the said term the lessor, his heirs or assigns, or the incoming tenant, shall and will pay to the lessee, his executors, administrators, or assigns, for the straw, hay, hulls, chaff, and other fodder grown upon the said premises, and then being properly unconsumed or not thrashed out thereon, such sum of money to be ascertained by valuation as hereinbefore mentioned, such valuation to be made as to the said straw at fodder price, and as to the said hay at market price; AND ALSO shall and will take away and remove all straw to be thrashed out by the lessee, his executors, administrators, or assigns, after the expiration of the said term, as it comes from the machine; AND ALSO shall and will pay to the lessee, his executors, administrators, or assigns, such sum of money as shall be determined by valuation as hereinbefore mentioned as compensation for all such of the following matters as the lessor, his heirs or assigns, or the incoming tenant, shall have the benefit of, viz.: For all grass and clover seeds, and the cost of sowing the same; For all tillage operations, seeds, and manure expended on the root crops; For all ploughings and all preparations for wheat; For all tillage operations upon fallows; For all labour upon farm-yard manure, and for all land in sainfoin not exceeding three years lay*; PROVIDED ALWAYS that if and whenever any part of the said several rents hereinbefore reserved shall be in arrear for twenty-one days, whether the same shall have been legally demanded or not, or if and whenever there shall be a breach of any of the covenants by the lessee herein contained, the lessor, his heirs and assigns, may re-enter upon any part of the said premises in the name of the whole, and thereupon the said term shall absolutely determine. AND IT IS HEREBY DECLARED that every valuation or arbitration under this lease shall be made by two indifferent, &c. [See clause 31, on p. 19.] AND IT IS HEREBY FURTHER AGREED AND DECLARED that if the lessee, his executors, administrators, or

36. And to supply lessee with specified materials when required for repairs.

37. And to pay for unconsumed straw, hay, and other produce at the expiration of the term.

38. And to remove straw as it comes from the machine.

39. And to pay compensation for the unexhausted tillages specified.

40. Power to lessor to re-enter in case of non-payment of rent or breach of covenant.

41. Arbitration clause.

42. Renewal clause.

---

* *See* Agricultural Holdings Act, 1900, *post.*

Chap. I.
Sect. 2.
The Form of the Lease.

assigns, shall be desirous of taking a renewed lease of the said premises for the term hereinafter mentioned, and of such desire shall, prior to the expiration of the term hereby granted, give to the lessor, his heirs or assigns, or leave at his or their last known place of abode in England, one year's previous notice in writing, and shall pay the said rent hereby reserved, and observe and perform the several covenants and agreements herein contained, and on the part of the lessee, his executors, administrators, or assigns, to be observed and performed up to the expiration of the term hereby granted, then and in such case the lessor, his heirs or assigns, will, at the expense and at the request of the lessee, his executors, administrators, or assigns, and upon the execution and delivery by him or them of a counterpart, execute a renewed lease of the said premises for a further term of seven years from the expiration of the term hereby granted at the rents and subject to the provisions, covenants, agreements, and conditions contained in these presents, save and except this present covenant. IN WITNESS whereof the said parties to these presents have hereunto set their hands and seals the day and year first above written.

43. Schedule.

FIRST SCHEDULE (referring to Ordnance Maps).

No. on Map.	*Description.*	*Cultivation.*	*Quantity.*		
(Map 43.7)			A.	R.	P.
No. 101	House and Garden		0	2	10
No. 105	Lower Mead	Meadow	10	3	0
No. 35	Long Bottom	Underwood	5	0	4
	&c.	&c.			

SECOND SCHEDULE.

[This schedule comprises the underwood which is not excepted and reserved by the lease.]

Seal.

Abraham Broadacres.

Signed, sealed, and delivered by the within-named Abraham Broadacres, in the presence of Jonathan Crowquill, of , in the county of , Gentleman.

A document of the above nature is executed (*i.e.*, signed and sealed) by the landlord, and handed to the tenant hiring a farm for a term of years, the terms being, of course, varied according to the agreement come to between the parties. The tenant will himself execute a copy of the lease which is called a "counter-part," and the latter will be held by the landlord.

Leases where deed is not necessary.

It will be found in the supplement that a formal deed of this kind is not in every case necessary; and that tenancies from year to year, or even for short terms of years not exceeding three, may be made without the execution of any deed at all. In these cases it is usual to have a writing embodying the terms of the letting, and this writing is in fact a lease, though it is generally from its terms called an agreement. It is wanting in that formality and prolixity which we are accustomed to associate with deeds; but the words which it should use to express the substantial part of the agreement will not differ materially from the like expressions in a deed. When the tenancy is of this nature, the provisions of the lease will naturally be less elaborate and precise than in a letting for a long term of years.

EXAMPLE B.

Agricultural Lease by Memorandum of Agreement from Year to Year from Lady-day.

N.B.—In order to facilitate comparison between the provision of the two leases given as examples, we have appended in brackets to the marginal notes of this lease the number appended to that clause of Example A. which relates to the same subject-matter. When no number is appended, Example A. contains no corresponding clause.

1. Date and parties (cl. 1).

1. Memorandum of Agreement made the day of 1900, between Sir Alfred Bareacres, of Bareacres, in the parish of in the county of Baronet (hereinafter called "the landlord"), of the one part, and Christopher Drinkwater, of in the parish of in the county of Farmer (hereinafter called "the tenant"), of the other part.

2. Words of demise (cl. 2).

2. The landlord agrees to let, and the tenant agrees to take, the farm and lands situate in the parish of in the county of hereinafter described, with the exceptions or reservations,

for the period, at the rent or rents, subject to the obligations, and upon the conditions set forth in the several parts of this agreement hereinafter contained.

PART I.

The Farm and Lands the Subject of this Demise.

3. Description of farms (cl. 2).

3. All that farm and lands situate in the parish of in the county of , known as " Farm," and consisting of the following particulars, namely:

No. on Parish or Ordnance Map.	Description.	Cultivation.	Quantity.

PART II.

Exceptions and Reservations.

4. Exception of timber, and timber-like trees and saplings: and also of chalk, gravel, sand, and stone, with liberty to landlord to enter and cut or work (cl. 3).

4. Excepting and reserving all timber and timber-like trees, tellers, pollards, and saplings, and also all chalk, gravel, sand, and stone standing, lying, and being upon or under the said lands, with liberty of ingress, egress, and regress for the landlord and his agents, servants, and workmen, at all reasonable times, to mark, fell, work, dig, take, and carry away the same; paying reasonable compensation for all damage (if any) done thereby.

5. Exception of game, with liberty to landlord to sport (cl. 4).

5. Excepting and reserving also all game, woodcock, snipe, quail, landrail, rabbits, wild fowl, or fish in or upon the said lands, with liberty for the landlord and his friends, companions, gamekeepers, and servants, at all reasonable times of the year, to hunt, shoot, fish, and sport over the said lands, but without prejudice to the statutory right to kill and take ground game which the tenant will have as incident to and inseparable from the occupation of the said lands.

PART III.

Duration of Tenancy.

6. Duration of tenancy (cl. 5).

6. A term of one year certain commencing on the 25th day of March, 1900, and continuing from year to year, until the tenancy shall be determined by either party by one year's notice to quit, expiring at the end of a year of tenancy.

PART IV.

The Rents to be paid by the Tenant.

7. Annual rent (cl. 6).

7. The yearly rent of *l.* to be paid by equal quarterly payments without any deduction (except for land tax and the landlord's

property tax) on the 24th day of June, the 29th day of September, the 25th day of December, and the 25th day of March in every year; the first payment thereof to be made on the 24th day of June next.

8. Penal rent for breaking up pasture (cl. 7).

8. The further yearly rent of 50*l.* for every acre, and so in proportion for any less quantity than an acre of meadow or grass land (parcel of the said farm) which the tenant shall at any time plough and break up or convert into tillage or garden ground without the landord's consent, the first payment to be made on such of the said quarterly days as shall first happen after such ploughing, breaking up, or converting into tillage as aforesaid, and to continue payable during the remainder of the tenancy.

9. Additional rent in respect of improvements executed by landlord.

9. A further yearly rent equivalent to interest at the rate of 5*l.* per cent. per annum on any money which may be hereafter expended by the landlord on drainage or other improvements on the premises with the tenant's consent. The said rent to run from the date of such expenditure, and the first proportionate payment thereof to be made on such of the said quarterly days as shall first happen after such expenditure.

Part V.

Tenant's Obligations.

10. Tenant's agreement to pay rent (cl 9).

10. The tenant shall pay the said yearly rent of   *l.*, and also the additional rents above reserved, if the same shall become payable, at all times hereby appointed for payment thereof.

11. And rates and taxes (cl. 10).

11. The tenant shall also pay the rates, taxes, and assessments (except the land tax and the landlord's property tax).

12. And to repair, landlord finding materials (cl. 11, and see also cl. 15, 16, 17, 26, 27, 28, & 29).

12. The tenant shall keep in good and tenantable repair the exterior of the houses and other buildings, and the glass in the windows thereof, and in such repair leave the same at the end of the tenancy. He shall also, at the proper season, well and sufficiently lay, cut, repair, and keep repaired all hedges, mounds, rails, gates, and fences, and stoned and other roads; and open, scour, and cleanse all ditches, watercourses, and drains, and so leave the same at the end of the tenancy. But the tenant's obligation to repair shall be conditional on the landlord's providing such of the requisite materials as are specified in the agreement by the landlord, hereinafter contained.

13. And particularly to paint (cl. 12, 13 & 14).

13. In particular the tenant shall paint with two coats of oil paint, once in every three years (if the tenancy shall so long last), all the outside wood and ironwork previously or usually painted, and once in every seven years (if the tenancy shall so long last) all the inside woodwork previously or usually painted, the landlord providing paint as aforesaid.

14. And to haul materials for repairs (cl. 16).

14. The tenant shall haul, without charge, all materials for repairs or improvements, whether to be done by the landlord or tenant, provided that such materials be not brought from a distance exceeding seven miles from the said farmhouse.

15. The tenant shall not assign or underlet or part with the possession of any part of the premises (except cottages to labourers), without the licence in writing of the landlord or his agent.

15. And not to assign without licence (cl. 18).

16. The tenant shall stock, manage, cultivate, and farm the premises in a good, clean, and husbandlike manner, according to the best and most approved mode of husbandry in reference to farms of a like nature; and shall keep and leave the same in good heart and condition.

16. And to cultivate in husbandlike manner according to best mode of husbandry (cl. 19).

17. The tenant shall not at any time pare off the turf, or destroy or burn the herbage of any meadow or pasture ground, or break up the same, or convert it into tillage or garden ground without the written consent of the landlord or his agent.

17. And not to break up pasture (cl. 20).

18. The tenant shall consume upon the premises all roots and green fodder grown or brought thereon, and shall convert into manure, at the homestead, all hay, straw, haulm, and other fodder grown, made, or brought upon the premises, in a husbandlike manner; and shall spread, use, and expend thereon all manure made or brought on the premises in a husbandlike manner at the proper seasons. Provided that he shall be at liberty until notice to quit be given by either party to sell and remove hay and straw, on condition of bringing back and bestowing on the land the manurial value of the quantity sold, in oil or cotton cake, rags, fur-waste, or guano, or any artificial manure which may be approved by the landlord or his agent, and giving when required to the landlord or his agent satisfactory proof of the value of the hay and straw so sold or removed; and also of the cake, rags, fur-waste, guano, or manure so brought back and bestowed.

18. And to consume hay and straw and other fodder, and all dung on the premises, but with liberty to sell hay and straw, on bringing back equivalent in cake or manure (cl. 21, 22, 23, & 24).

19. The tenant shall not cause or permit any timber or other trees to be lopped or topped, or any such tree or any pollard to be felled, cut down, injured, or destroyed, without the written consent of the landlord or his agent, but shall to the utmost of his power preserve the same, and also all fruit trees, from any spoil or damage either by cattle or otherwise.

19. And to preserve trees (cl. 25).

20. The tenant shall allow no person to sport without the landlord's permission (other than any person or persons entitled to kill and take ground game in exercise of the tenant's statutory right hereinbefore mentioned), and so far as necessary for the purpose of preventing such sporting, shall sign all notices against trespass required by the landlord or his agent, and shall permit the landlord to bring any action or other proceeding in the tenant's name against poachers or trespassers on the premises.

20. And to do necessary acts for preservation of game.

21. The tenant shall to the utmost of his power prevent any new footpaths from being made over the premises.

21. And to prevent making of new footpaths.

22. The tenant shall, in the last year of the tenancy, prepare in good condition, and sow in good season with wheat, such proportion of the arable land as shall then be in due course for the same, and shall sow good grass seeds with the last year's Lent crops.

22. And in the last year of tenancy to prepare for wheat crop and to sow with grass seeds.

23. And to give up possession of premises at expiration of tenancy in good condition (cl. 30).

23. The tenant shall give up possession of the whole of the premises on the day of the expiration of the tenancy, notwithstanding any custom of the country to the contrary, and the repair and condition at the time of giving up possession shall be such as is required by a due performance of his obligation herein contained.

24. And at end of tenancy to leave hay, straw, and roots on compensation, and dung without compensation (cl. 31 & 33).

24. The tenant at the end of the tenancy shall leave all the hay, straw, and roots remaining unconsumed by him, being paid for the same by the landlord or incoming tenant as hereinafter provided, and shall leave all dung, compost, and manure without compensation.

PART VI.

The Landlord's Obligations.

25. Landlord's agreement to do substantial repairs.

25. The landlord shall keep in good and tenantable repair the main walls, main timbers, floors and roofs of the houses and other buildings, upon receiving notice from the tenant that any such repairs are, and upon such repairs being in fact, wanted.

26. And to supply specified materials for tenant's repairs (cl. 36).

26. The landlord shall, on the receipt of notice in writing of any converted timber, posts, rails, paint, bricks, tiles, slates, or lime, or of any quicks for hedges being required by the tenant for the purpose of putting or keeping the premises in a proper condition, supply such of the said materials as may be necessary, at some place within seven miles from the said farmhouse.

27. And to insure (cl. 35).

27. The landlord shall keep the farmhouse and farm buildings insured against loss or damage by fire, in a sum sufficient to cover the value thereof, and the money received under such insurance shall be forthwith laid out in rebuilding and reinstating the premises in respect of which the same shall be received.

28. And that landlord or incoming tenant will allow compensation for matters specified (cl. 37 & 39).

28. The landlord or the incoming tenant shall pay or allow to the tenant at the end of the tenancy, according to valuation, for the following matters and things:—

(*a*) For the wheat sown as before provided.

(*b*) For the grass seed sown with the last year's Lent crops and the cost of harrowing the same.

(*c*) For every acre of the last crop of roots fed off an amount not exceeding 40*s*. per acre, and so in proportion for a less quantity than an acre.

(*d*) For the unconsumed hay and straw at a consuming price.

PART VII.

General Provisions.

29. Power to landlord to re-enter for non-payment of rent, breach of agreement, or bankruptcy (cl. 40).

29. If a quarter's rent shall be in arrear for forty days, whether the same shall have been legally demanded or not, or if there shall be any breach of the obligations by the tenant of the conditions herein contained, or if the tenant shall become a bankrupt, or a liquidating

or compounding debtor, the landlord may forthwith re-enter and eject the tenant.

30. Account to be taken at the end of the tenancy.

30. At the end of the tenancy an account shall be taken between the landlord and tenant as follows, namely:—

1st. A valuation shall be made of the several matters and things which are hereinbefore agreed to be paid or allowed for by the landlord or his incoming tenant, and the amount of such valuation shall be debited to the landlord; and, secondly, the valuers shall determine whether and (if so) what sum of money ought to be paid or allowed by the tenant to the landlord for any breach by the tenant of the terms and conditions of the tenancy or in respect of the condition in which he has left the farm, and the same, together with any arrear of rent or of rates and taxes which may be owing from the tenant, shall be debited to the tenant: And the balance which upon such account shall appear due from one party to the other shall be forthwith paid with interest thereon after the rate of 4*l.* per cent. per annum computed from the end of the tenancy.

31. Arbitration clause (cl. 41).

31. Every valuation under this agreement shall be made by two indifferent persons, one to be named by each party interested, and in case of their disagreement, then by an umpire to be chosen by the valuers previously to entering upon the consideration of the matters referred to therein, and in case either of the parties shall neglect to name a valuer for the space of seven days after a notice in writing so to do shall have been given to him by the other party, or shall name a valuer who shall refuse to act, then the valuation may be made by the valuer named by the other party alone. The valuers or their umpire shall have power to decide any questions which may arise in the course of their valuation, and in particular any questions as to what matters or things are proper subjects of valuation or allowance according to the true intent and meaning of this agreement. Every reference to valuers under this agreement shall be deemed a reference to arbitration within the provisions of the Common Law Procedure Act, 1854, or any statutory modification thereof, and shall have all the incidents and consequences of an arbitration under that Act.

As witness the hands of the said parties,

ARTHUR BAREACRES.

Witness: JONATHAN CROWQUIL,
Solicitor,
Newtown, Hampshire.

CHRISTOPHER DRINKWATER.

Witness, &c.

Supplemental agreement for compensation of outgoing by incoming tenant.

It will be observed that the above agreement, and this observation applies also to the other lease (Example A.), makes no provision for the payments which the tenant may properly be called upon to make to the outgoer in respect of opera-

CHAP. I. Sect. 2. *The Form of the Lease.*

tion by the latter of which he will take the benefit. These payments should be the subject of a subsidiary agreement between the landlord and tenant at the time that the letting is agreed upon; and the terms of that agreement must depend upon the compensation which the outgoer is entitled to under the terms of his holding. Assuming that he is holding on the same terms as those agreed to by the incomer, and that those terms are the terms expressed in Example B., the subsidiary or supplemental agreement will be in the form set out below. The important point for the landlord or his agent to attend to in any case is that the incoming tenant shall definitely undertake to liquidate the legitimate claims, whatever they may be, of the outgoer.

Supplemental Agreement.

Whereas the said farm is at present in the occupation of X. Y. (hereinafter called the outgoing tenant), under an agreement dated day of 19 , and he has received notice to quit, which will expire on the day of next, and by the said agreement it is provided (in clause No. 28 of Part VI. thereof) that the landlord, or his incoming tenant, shall, at the end of the said tenancy, pay or allow to the outgoing tenant according to valuation for the following matters and things, namely (specifying them). And it is provided (in Clause No. 30) that at the end of the tenancy an account shall be taken between the landlord and outgoing tenant as follows:—1st, that a valuation shall be made of the several matters and things which are thereinbefore agreed to be paid or allowed for by the landlord or his incoming tenant, and the amount of such valuation shall be debited to the landlord; and secondly, that the valuers shall determine whether any and (if so) what sum of money ought to be paid or allowed by the outgoing tenant to the landlord, for any breach by the tenant of the terms and conditions of the tenancy, or in respect of the condition in which he has left the farm, and the same together with any arrear of rent, or of rates and taxes owing from the tenant, shall be debited to the outgoing tenant; and that the balance upon which such account shall appear due from one party to the other shall be forthwith paid with interest thereon, at the rate of 4*l*. per cent. per annum, computed from the end of the tenancy. NOW IT IS HEREBY AGREED between the landlord and tenant under this agreement (hereinafter called the incoming tenant), that whatever sum of money shall, under the said recited agreement, become payable to or from the outgoing tenant, shall be paid or received (as the case may

The Form of the Lease.

be) by the incoming tenant, and the valuations to be made under the said agreement shall be binding on the incoming tenant. AND IT IS ALSO AGREED that if any sum of money shall, by the valuation to be made as aforesaid, be awarded to be paid or allowed by the outgoing tenant to the landlord, or the incoming tenant, for any breach by the outgoing tenant of the terms and conditions of the tenancy, or for the state of the farm, and which sum of money shall accordingly be brought into the account, and paid or allowed for as aforesaid, the incoming tenant shall lay out an equal sum on the farm forthwith, or so soon as the same can profitably be laid out thereon. AND whatever of money (if any) shall be found owing by the outgoing tenant for arrears of rent, or of rates and taxes as aforesaid, and which shall accordingly be brought into the account, and allowed for as aforesaid, shall be forthwith applied by the incoming tenant in the payment of such arrears.

As witness the hands of the parties, &c.

Agreement to grant or accept leases.

An agreement such as Example B., which is in fact a lease (see Supplement), is to be distinguished from a mere preliminary memorandum, such as the parties often sign with a view to bind one another to the granting or acceptance of a lease. For the signature of a party or his authorised agent is essential in order to bind him to accept or to grant a lease; therefore, when the bargain is to be actually struck before the necessary lease can be prepared, the heads of the arrangement are frequently reduced into writing. A., for instance, agreeing to grant, and B. to accept, a lease of the premises in question, the lease to provide that the term shall be so many years from such a date, the rent to be *l.*, payable on usual quarter days, the tenant to pay rates and taxes except as specified, and to repair, or lessor to repair at lessee's expense if latter fails to do so after notice, lessor to provide materials gratis and carriage free on premises, and so on, particular care being taken to express what are to be the general terms of the compensation clauses, unless each party is familiar with a generally prevailing local custom* on the subject, and they intend to abide by it, or are satisfied to leave such matters to the operation of the Agricultural Holdings Act, 1883.

---

* *See* Agricultural Holdings Acts, 1883 and 1900, upon Custom, *post*.

Chap. I. Sect. 2. *The Form of the Lease.*

Although these preliminary writings are absolutely essential where either party proposes to take any important steps on the faith that a lease will be executed, it is evidently much better, and less likely to produce complications, for the matter to remain entirely open until a draft of the proposed lease can be read and discussed, and so all possibility of misunderstanding avoided. Where the agent is reletting a farm on the terms of the last tenancy, or with only very slight variations, difficulty may, however, be avoided by giving the intended tenant an opportunity of reading the old lease, and then binding him by a memorandum to accept a lease on similar terms.

Agreements to grant or accept leases, when clearly and precisely drawn, are frequently deemed sufficient by the parties without the lease being drawn and executed. The stamp upon them is the same as would be the stamp upon the lease itself, and in the event of a lease being executed within a certain period a second *ad valorem* stamp is not required.

SECTION III.

The Subject-Matter of the Lease.

ANALYSIS OF CONTENTS OF LEASE—NAME AND DESCRIPTION OF FARM—TREES AND UNDERWOOD—GAME—MINERALS—PAYMENT OF RENT—RATES AND TAXES—TITHE RENTCHARGE—REPAIRS—INSURANCE—CULTIVATION—CONSUMPTION OF HAY, STRAW, ETC.—COMPENSATION AND RIGHTS OF LESSEE AT EXPIRATION OF THE TERM—LESSOR'S POWER OF RE-ENTRY.

Analysis of contents of lease.

If we revert now to the contents of the lease by deed (Example A.) above set out, we find that its contents naturally divide themselves into four leading divisions. After the date and parties, there is, *firstly*, that part of the document which constitutes the actual grant of the lease, defining the property granted, the rights which the land-

The Subject-Matter of the Lease.

lord reserves over it, the length of the term, and the amount of the rent. This part ends with clause 8. Then come, *secondly*, the lessee's covenants contained in clauses 9 to 33. *Thirdly*, we have the lessor's covenants (clauses 34 to 39). And *lastly*, come the miscellaneous clauses, viz., the power of re-entry, as to arbitration and renewal; but of these clauses the power of re-entry and the arbitration clause are the only ones which are always, under every circumstance, to be inserted. The order of arrangement of the several clauses may, of course, vary, but the outline of classification above described and followed in this lease appears to be one easy to understand and remember.

So much for the general form of the document. It may be worth while now to indicate the several leading points which the student will find by careful study of the example are raised by it, and to which he will have to direct his attention on making terms with a tenant. We shall number these points, as nearly as may be, in the order in which they occur in this lease.

The first part of the lease (clause 1—8 suggests that he must be ready, in the first place with

(1.) The description and acreage of the farm (clause 2).

In the next place he must know his intention with reference to the rights to be retained over the soil by the landlord, so as to make his bargain with reference to

(2.) Trees and underwood (clause 3; see also clause 25);

(3.) Game (clause 4; see also clauses 28, 29); and

(4.) Minerals (as to which the lease is silent).

The other points raised by this first part of the lease are less likely to escape his attention; they are

(5.) The commencement and length of the term (clause 5).

(6.) The annual rent and time of payment (clause 6).

(7.) Penal rents for prohibited acts, if it is desired to reserve any (clause 7).

When we come to the second and third parts of the lease, containing the lessee's and the lessor's covenants, it is to be

Chap. I. Sect. 3. *The Subject-Matter of the Lease.*

observed that the form of the document makes it necessary for the whole of the obligations undertaken by the lessee to be kept separate from those undertaken by the lessor, although their respective obligations may relate to the same subject-matter. This difficulty may be avoided in a lease made without a deed, but by memorandum of agreement, because in that case each paragraph may be, and is often, drawn so as to express an agreement between the parties, and to imply a number of promises or undertakings by both of them. But a study of the covenants will be found to raise (expressly or by implication) the following leading points:

(8.) Payment of rates and taxes (clause 10);

(9.) Repairs (clauses 11—17 and 36);

(10.) Insurance (as to which the lease is intentionally silent, but see clause 35);

(11.) Assignment, or parting with possession (clause 18);

(12.) Cultivation (clauses 19 and 20);

(13.) Consumption of hay and straw, or of cake, or purchased manure in lieu thereof (clauses 21—23), and of dung (clause 24);

(14.) Compensation and rights of lessee at expiration of term (31—34, and 37—39).

Finally, what we call the third part of the lease brings us to the important clauses as to

(15.) Lessor's power of re-entry;

(16.) Valuation and arbitration;

(17.) Provisions for renewing the lease, or for determining it on notice.

All these seventeen points will, in every case of an agricultural lease, require attention; and, although every letting will probably need some covenants and provisions special to its own peculiar circumstances, the above enumeration comprises the material part of the subject-matter of every lease. As to some of the parts enumerated, the mere mention of them is sufficient; but there are others upon which some observations may be made, with a view to the assistance or information of the beginner. But he may here be again reminded of the desirability of understanding at least so much of the legal aspect of the matter as is put before him at the end of the book.

Description and acreage of farm.

It seems usual in the body of the lease to call the farm by its ordinary name, and state the total acreage; and then, in a schedule, to give the full particulars. This is done by giving the number of each field, either on the Tithe or Ordnance map, followed by its name, cultivation, and acreage. The sum total of the quantities must, of course, agree with the acreage specified in the beginning of the lease. It is to be observed that mistakes in these schedules are easily made, either in the drafting or copying, and it is always worth while to see that the schedule is correct on the engrossed lease.

Trees and underwood.

The landlord, in all cases, has the sole right to the timber; but so long as it is standing it is a part of the land, just as much as a house or building upon the land. Therefore, if it is demised, the landlord has no power over it during the term. He can no more go and cut it down than he can knock down the homestead. If he desires to fell it, it is necessary to except the timber from the demise, to reserve the right to enter, and to fell and draw it away at all seasonable times. The word "seasonable" or "convenient" is usually attached to the covenant, as it would not be right to conduct this operation at a season when the doing so would injure the crops of the tenant. It is also desirable to except underwood. The tenant's rights in respect of this are larger than they are with regard to timber-trees. As to the latter, he may only use them as they stand; that is, his cattle may benefit by their shade, and he may have the fruit or mast from them. But as to underwood, or at least as to such part of it as can never become timber, the tenant may, in the absence of agreement to the contrary, have a right to cut it, in which case the rules of good husbandry will, of course, apply.

Game.

The exception or reservation of game is absolutely necessary whenever the landlord desires the right of shooting, as, by the law, the game belongs to the tenant. To what extent this reservation is to be made is a matter of arrangement which need not be discussed. But it is to be recollected that, in making the reservation, the parties are now subject to the fetter placed upon them by the Ground Game Act, 1880 (43 & 44 Vict. c. 47), which gives a right of killing and taking ground game, both hares and rabbits, to the occupier. But the right so given is not an exclusive right, and does not prevent the existence of a similar right in any other person. The object of the statute, as stated in the preamble, was to enable occupiers "to protect their crops from loss and injury by ground game;" and it clearly was not necessary for this purpose to vest in the occupier the *sole* right to destroy it. The important feature of the Act is that the right which it gives to the occupier is inseparably attached to his tenancy. Section 3 of the Act says: "Every agreement, condition, or arrangement which purports to divest or alienate the right of the occupier, as declared, given, and reserved to him by this Act, or which gives to such occupier any advantage in consideration of his forbearing to exercise such right, or imposes upon him any disadvantage in consequence of his exercising such right, shall be void." The inalienableness thus clearly expressed renders every act of the landlord or agent to over-rule it legally null and void, and consequently useless and unwise; for, though the parties might make mutual promises—for instance, the landlord might promise he would make a rebate of 20*l.* in the rent if the tenant would not touch the hares and rabbits—yet the introduction into the relation of landlord and tenant of an obligation which is moral only, and which could not be enforced legally, is a course which cannot be recommended.

Such being the position of the tenant in respect of ground game, the necessity for covenants to secure him against damage caused by it no longer exists; for where the occupiers have the right to destroy, there can, of course, be no claim for damage. Therefore both the landlord and the agent are relieved from one of their greatest difficulties by this act of the Legislature. It must, however, be explained that if injury is caused to crops through excessive preservation of ground game, that is, when such preservation exceeds that which is reasonable, and such that a tenant, even with this right, cannot abate, a claim for damages difficult to resist will lie against the landlord.

It is plain, however, from what has been said already, that where the landlord desires to exercise sporting rights, the ground game, as well as the winged game, should be reserved to him in the same terms as were customary under the old law. Such a reservation cannot affect the occupier's inalienable statutory right; and this limit to the power of the landlord to reserve it may be noticed in the lease (as it is noticed in the examples already given). But without a general reservation to the landlord, the latter would have no right to shoot a hare or a rabbit at all. This subject, however, will be further alluded to in the Supplement.

It is sometimes thought better to require from the lessee an express covenant to the effect that he will not injure, but do his utmost to preserve and protect, the nests and eggs and young birds; but, as will be observed in our example, the exception and reservation were considered sufficient.

Minerals.

The term "Minerals" applies, of course, to all substances below the surface, whether they may be used for building or for any other purposes. As a rule, a tenant can work no substance of this kind. But this rule does not seem to apply where there are pits or mines in actual working at the time of the letting, and forming a regular item in the profit of the property. It is, therefore, generally best for the landlord to claim the whole right to the minerals; and if there is any probability of his needing to work them, he should also reserve a right to enter and work them, and use such part of the surface as he may need. But he must, in the event of occupying surface,

Chap. I.
Sect. 3.
The Subject-Matter of the Lease.

either by the withdrawal of material or the formation of roads, give fair compensation to the tenant. This may be done by allowing a reduction of rent, in accordance with the surface occupied. In the lease before us nothing was said about minerals; but in that case there were no open pits which the tenant could possibly have claimed to work, so there was no need of a clause to protect the minerals from him; and the property was of such a nature that there was no kind of likelihood of the landlord needing to resort to it for the purpose of digging any materials whatever. The above observations as to the tenant's right are to be read with this very important qualification—that as to such substances as chalk, gravel, clay, or the like, which he may need for the purpose of fulfilling his covenant to repair, &c., or for application to the soil, he is always at liberty to dig a necessary quantity, unless they are expressly excepted out of the demise.

With regard to flints and other stones lying on the surface, the tenant may use the same for the maintenance of private roads passing through his farm; he cannot, however, by himself, give permission to the highway authorities to gather and remove them; this permission requires the owner's concurrence.

The question of stones for use on the highways, and the various clauses relating thereto in the Highway Act of 1835 (5 & 6 Will. 4, c. 50) and subsequent Acts, are worthy of consideration. It is clear that stones may be demanded by the surveyor when required for use in the parish; he can, with the consent of the owner, or on a licence obtainable from the justices, after one month's notice given to the owner and occupier, claim the right to enter upon private lands to gather and take away stones from the surface, or even, provided the supply of material upon the wastes of the parish is exhausted, to dig and get stones in such private lands. And the licence to gather from the surface is to be given without any allowance of compensation for material, though not without compensation for damage done in

The Subject-Matter of the Lease.

removal. Compensation is given only for stones obtained by digging (see sections 51, 53, and 54 of the Act of 1835). The Act, however, gives great discretionary power to the justices, and they may, on sufficient reason being shown, refuse the licence.

This matter has been argued in a case, *The Alresford Rural Sanitary Authority* v. *Scott*, in which the justices, in special session, held that flints could not be taken except on payment for the material being made. A case, however, was stated to the judges, under the Summary Jurisdiction Act, and was heard before Mr. Baron Huddleston and Mr. Justice Hawkins, in the High Court of Justice, Queen's Bench Division, on the 30th day of May, 1881, when the decision of the justices was reversed. The Court held that no compensation could be allowed for stones gathered off the surface, but that the Act gave great discretionary power to the justices as to the granting of the licence.

Payment of rent.

It will be observed that the rent is made payable quarterly, the quarter-days being December 25 (Christmas), March 25 (Lady-day), June 24 (Midsummer-day), and September 29 (Michaelmas-day). It is customary, however, to collect half-yearly, and when the half-years fall upon September 29 (Michaelmas) and March 25 (Lady-day), it is a good practice to give some certain period, say, three or four months credit, and for the following reasons. At "Michaelmas" the farmer has just passed through the heavy expense of harvesting his crops, and has not had time to realise. It is, in fact, the end of his financial year, when his funds are, naturally, at a low ebb. At "Lady-day" the corn-stacks have not recovered from the winter; if thrashed, the grain will be cold, and will fetch but a low figure. The fattening of cattle and sheep will also have been a heavy expense for some months, and the prices of meat are often low at this time of the year.

It is wise in collecting the rent to remember these matters and assist the tenant as far as is compatible with the interest of the landlord. (For further information, see *sup.*)

Rates and taxes.

Rates are generally paid by the tenant. It is, however, a matter of arrangement. If the landlord pays them, as is sometimes the case, in order to avoid disturbing the arrangement of the rate-book, the amount is reckoned and added to the rent, so that it is really paid by the tenant directly or indirectly. It may here be mentioned that all rates are collected in advance; therefore, if an out-going tenant has paid a rate, and a portion of the time for which it is collected is unexpired when he quits his farm, he is legally entitled to recover from the landlord or the incoming tenant for that portion. Rates are collected from every parish for the purposes of the poor, the highway, and the county. They are collected by the "overseers" when demanded by the "Board of Guardians," Highway Boards, or Rural Sanitary authorities acting as Highway Boards. The rate levied is upon the value of the property in the parish (a value being ascertained for the purpose and called the rateable value), and is generally a shilling or two in the pound. The collection takes place twice a year. The rate-book, every time a rate is levied, must be made out and signed by two justices before collection. . The amounts required, being duly notified by the clerk of the board to the overseers, must be paid in to the credit of the "guardians" punctually to the day; it is therefore necessary to collect with all dispatch, and also right that those who can pay should do so promptly, as it otherwise throws upon an unpaid official a great deal of undeserved anxiety. When the office of overseer is too heavy, a clerk or assistant overseer may be appointed to make out and collect the rate, levying a special rate to defray the expense. The appointment, however, must be approved by the Local Government Board, and does not relieve the "overseers" from any responsibility of office.*

With regard to the taxes, the "Property Tax," or Schedule A. Income Tax (called Property Tax when levied upon land), is collected from the occupier or tenant, and must be paid by him. He, however, when he pays his rent, carries the receipt with him, and demands deduction. This the landlord is compelled to allow him, as any agreement to put the charge upon the tenant will be void, the liability to the tax being inalienable. It is intended to be a tax upon the landlord's income as opposed to Schedule B. Income Tax, which is levied upon farmer's income, and which, unlike other income derived from ordinary trade, is reckoned under the Finance Act of 1896, at one-third of the annual value of the land.

---

* *See* Agricultural Rates Act, 1896 (59 & 60 Vict. c. 16). Supplement.

Farmers now have the same privilege as tradesmen and others, and can, if they think fit, pay upon their profits. They must, however, produce an account showing their receipts and expenditure; and a form of account can be obtained on application to the Surveyor of Taxes of their district.

Landowners, too, farming their own land can, like tenant farmers, make an application for the return of Schedule B., and if they can show to the satisfaction of the commissioners that their operations have been attended with loss, they will receive, in due course, a part or the whole of the amount paid.

It should, too, be borne in mind that Schedule B. is payable, if paid in the original manner, on the rent, plus the tithe rentcharge, and at the rate as stated above. It should be noted that if a farmer's taxable rent does not exceed 480*l.* he is exempt from the payment of Schedule B., because 480*l.* will produce at one third of the annual value, the same amount that 160*l.* at 1*s.* will produce; and incomes not exceeding 160*l.* are exempt from the payment of Income Tax.

Tenant farmers are assessed upon the rent which they pay their landlords, and which is obtained by a triennial return. Landowners farming their own land make their return from the gross estimated rental taken from the poor law assessment. The rent, nevertheless, must be that which a yearly tenant would pay, he paying all tenant's rates and taxes, and tithe rent-charge, if any.

CHAP. I. Sect. 3. *The Subject-Matter of the Lease.*

The Land Tax is collected from the tenant at the same time as the Property Tax, and is repaid him by the landlord, unless the latter has, as he may do, contracted himself out of his liability to repay it. The important point to notice with regard to it is, that before any considerable improvement in the estate it ought to be redeemed; although, in the absence of an intention to materially improve, there is little reason for doing so. Full information with regard to the redemption of Land Tax can be obtained on application to the clerk of the Land Tax Commissioners in the division in which the property is situate, or directly from the Commissioners in London.*

It is not necessary that the person redeeming should be the absolute owner of the estate. For instance, if a tenant for life thinks proper to buy up the land tax upon his estate as an investment he can do so, and leave the sum so invested to his younger children; for the estate will then be charged in his favour with the amount he paid for redemption, with interest thereon equivalent to the land tax redeemed. And if he wishes to benefit his successors, he can have the charge merged in the estate.†

It may interest the student to know that this tax, which had been imposed under different forms from very early periods of our history, was levied under its present name in the reign of William and Mary. It was made perpetual by Mr. Pitt in the reign of Geo. III., and it was he who introduced the plan for its redemption. (See Supplement.)

---

* The Finance Act, 1896 (59 & 60 Vict. c. 28, s. 32), provides as follows in regard to redemption of the tax: "The owner of any land may in any year redeem the land tax on such land by payment to the Commissioners of Inland Revenue of a capital sum, equal to thirty times the sum assessed on such land by the assessment last made and signed, after deducting any increase of the assessment made by virtue of this section, and such sum may be paid either in a single payment, or by such annual instalments as may be agreed upon with the Commissioners, and interest at the rate of three per cent. per annum on so much of the capital sum as remains unpaid shall be payable with each instalment, and all the instalments remaining unpaid may be paid at any time."

† *See* Section 33 of the above Act, *post.*

Tithe rentcharge, though not a tax in the correct sense of the word, is, nevertheless, a charge upon the land, or, more correctly speaking, a charge on the produce of the land, and may be considered under this head.

Tithe rentcharge.

Tithe, as its name denotes, is the tenth portion of the produce of the land set aside for the purposes of the Church. The origin is an ancient one, but it is not necessary here to trace its history. It was, however, originally collected from the products of the soil, the increase of domestic animals, and personal industry; and called respectively *Prœdial, Mixed,* and *Personal* tithes.

The tithes so collected were divided into four portions—(1) for the bishops; (2) for the maintenance of the church; (3) for the poor; (4) for the incumbent; but afterwards bishops were disallowed their fourth, their diocese being otherwise endowed.

Before the suppression of religious houses in the year 1539 they had largely appropriated the tithes, providing service and maintaining the poor; but when the suppression took place their appropriations were given to the king. From this has arisen the *Lay Impropriator;* that is, a layman owning appropriated tithes, obtained originally by infeudations made by the king to his lay subjects.

Tithes are now owned by *Rectors, Vicars,* and *Lay Impropriators.* The first is the owner of unappropriated tithes, who also has the cure of souls in the parish; the second, the owner of a portion of the tithes, and who also has the cure of souls; and the latter, as explained, the owner of the appropriated tithes, where a vicar takes the cure of souls.

Rectors owned, and possessed themselves, of all the tithes of the parish; the vicar, the *small* or *vicarial* tithes, that is, a tenth portion of all but hay, corn, and wood, which were designated *great* tithes; the latter belonging to the lay impropriator.

The owners of great tithes are accountable for the maintenance of the chancel of the church; the vicar has no such liability.

From the earliest history of tithes the possessor has been responsible for a share in the maintenance of the poor, and this responsibility still attaches to the ownership, as it is expressly declared in the "Act for the Commutation of Tithes in England and Wales" (6 & 7 Will. 4, c. 71, s. 69), "That every rentcharge payable instead of tithes shall be subject to all parliamentary, parochial, and county and other rates, charges, and assessment, in like manner as the tithes commuted for such rentcharge have heretofore been subject."

The Act above quoted was passed in the year 1836, its object being to change the payment in kind to a charge upon the land. This was rendered necessary by the friction caused by the collection of the produce by the clerical owner or his lessee; but it is not necessary here to say more than that a tenth portion of the produce was left in the field by the farmer, and gathered into tithe-barns by the tithe owner.

Under this Act a sum in lieu of tithes was agreed upon among the parties interested; and, after confirmation, this sum was apportioned among the lands in the parish, and became a rentcharge in lieu of tithes. It was further enacted that this rentcharge was to fluctuate with the price of corn, it being considered unjust to deprive the tithe owners of the benefits which then attached to the rise and fall in the price of corn, especially of wheat. Sect. 56 therefore enacted "that immediately after the passing of this Act, and also in the month of *January* in every year, the Comptroller of Corn Returns for the time being, or such other person as may from time to time be in that behalf authorised by the Privy Council, shall cause an advertisement to be inserted in the *London Gazette* stating what has been during seven years ending on the *Thursday* next before *Christmas Day* then next preceding, the average price of an imperial bushel of *British* wheat, barley, and oats, computed from the weekly averages of the corn returns."

Chap. 1.
Sect. 3.
The Subject-Matter of the Lease.

And section 57 further enacts: "That every rentcharge charged upon any lands by any such intended apportionment shall be deemed at the time of the confirmation of such apportionment, as hereinafter provided, to be of the value of such number of imperial bushels and decimal parts of an imperial bushel of wheat, barley, and oats as the same would have purchased at the prices so ascertained by the advertisement to be published immediately after the passing of this Act, in case one-third part of such rentcharge had been invested in the purchase of wheat, one-third part thereof in the purchase of barley, and the remaining third part thereof in the purchase of oats, and the respective quantities of wheat, barley, and oats so ascertained should be stated in the draft of every appointment."

The value of tithe, therefore, in each year is simply the amount of money required to purchase a set number of bushels of wheat, barley, and oats, at the prices advertised in the *London Gazette,* as above set forth. For example: Let the sum of one hundred pounds be equally divided into three parts, and expended in wheat, barley, and oats at the prices named in 1836, that is, 7*s.* 0$\frac{1}{4}$*d.* per bushel of wheat; 3*s.* 11$\frac{1}{2}$*d.* per bushel of barley; and 2*s.* 9*d.* per bushel of oats; and it will be found that the number of bushels respectively will be 95, 168, and 243, a total of 506. Now, the prices for the year 1898 were as follows: Wheat, 4*s.* 5*d.*; barley, 3*s.* 4$\frac{3}{4}$*d.*; and oats, 2*s.* 3$\frac{1}{2}$*d.*; so that 68*l.* 14*s.* 11*d.* would purchase the same number of bushels that 100*l.* purchased in the year 1836. Thus tithe owners arrive at the value of their tithes in each year.

It has been proposed to reduce the period of seven years to a period of three years, the object being to bring the payment more to the level of current prices; for, although the longer average has worked well through the years of prosperity, it has been found oppressive during the recent years of depression.

Having thus given briefly the history of tithe, and the way in which it is calculated, we will proceed to discuss it in a landlord's and tenant's point of view.

Tithe from a landlord's and tenant's point of view.

Tithe is a primary charge upon land, and becomes on this account a landlord's charge. It was, too, the intention of the Act that he should pay the charge, as is evinced by section 80 of the Act quoted, which states—that "every tenant or occupier who shall occupy any lands by any lease or agreement made subsequently to such commutation, and who shall pay any such rentcharge, shall be entitled to deduct the amount thereof from the rent payable by him to his landlord, and shall be allowed the same in account with the said landlord." This, however, was, as a rule, shifted by custom on to the shoulders of the occupier; the above enactment not being inalienable; and the law so far recognised his liability, as to render him liable to distress for non-payment. The tithe-owner looked to the occupier for payment, and had no concern whatever in any arrangement made between him and his landlord. The charge really did not affect the interests of either party; as a charge on the landlord it was borne by him, and by him alone. The rent which he received from the occupier was more or less, according as the amount was paid directly or indirectly. In the year 1891, however, the Tithe Act was passed. Suffice it to say that the payment of tithe has now been thrown compulsorily upon the landowner—that is, he cannot shift the burden by contract. Any covenant to this effect will be void at law.

The rentcharge in lieu of tithe is payable in two equal instalments, and becomes due on the first day of July and the first day of January in every year.

Collection.

Tithes must now be collected from the owner, even though the tenant has covenanted to pay them, though in this case the landlord will be entitled to recover as for rent in arrear with costs.

Distress.

The power to distrain upon the tenant has been entirely removed, and now, in the event of non-payment of his tithes within a specified time, the tithe-owner must apply to the judge of the County Court, who may, after hearing the parties, appoint a receiver, who shall pay from the rent he receives the amount of the tithes with the costs to the tithe-owner, and the balance he shall pay to the landowner. If, however, the landlord is himself the occupier, and the tithe is in arrear, the tithe-owner must apply to the judge of the County Court, who may appoint an officer of the court with power to distrain for the amount due for tithes and costs. In this case the tithe-owner's right of distress remains as under the Tithes Commutation Act, 1836, except that the distress can only be levied by the said officer of the court.

Redemption of Tithes.

Tithe rentcharge under certain circumstances may be redeemed by the payment of a capital sum equal to twenty-five times the amount of the rentcharge. It is seldom, however, that this is resorted to except in the case of the division of land for building purposes. This was provided for by section 32 of the Act of 1860, which it is not necessary to quote.

There is, however, except under these conditions, little or no inducement to landowners to redeem the charge. Matters point, we are glad to see, to an early change in this respect, and probably before long landowners will find it worth their while to disencumber their land from an irritating and fluctuating charge.

Re-apportionment of tithes.

The re-apportionment of tithe is an important matter in some cases, and it seems necessary to draw the attention of land agents to the subject.

When exchange of land takes place, or where lands are divided into plots for building, and where redemption has not been adopted, it is necessary to re-apportion the tithe. If this is not done the tithe-owner may demand the tithe due to him from one party, and recover from one for the whole if not paid; leaving him to recover the amount paid from others. The costs of apportionment will fall upon the party demanding it.

Extraordinary tithes.

It may seem unnecessary to some to write upon a matter which has already been met by legislation, and which has now undergone inquiry, with a view to its commutation, by the Land Commissioners. But it has not yet become a thing of the past, and therefore some information with regard to it, and to the change effected, will be useful and interesting. In these days it is not enough to know that certain things exist, it is necessary to know something of the past history of events with which we have to deal.

Extraordinary tithe, as its name denotes, is a tithe over and above the ordinary tithe, and levied upon hop grounds, orchards, and market gardens. In parishes where these crops were grown, landowners, on giving notice to the Commissioners when the commutation took place in 1836, could have the tithes thereon separately valued (section 40); and this amount was declared to be an extraordinary tithe, and was to be levied as a rate per imperial acre. This charge amounted to 15*s*., 20*s*., and sometimes more, per acre.

One feature of importance in this imposition was, that it was to exist only whilst the special cultivation continued. When it ceased, and from the 31st day of December next following such cessation, the charge was to be discontinued, but revived again with any newly planted ground on the following terms: No charge the first year after planting, one half the second year, and the full charge the third year (see section 52). It should be here noted that the chief difference was in the fact that in the ordinary tithe a perpetuity was created, but in the case of extraordinary tithe a terminable annuity alone existed. If this is borne in mind the difficulties of establishing the capital value, to be hereafter explained, will be manifest.

In districts, therefore, where this special cultivation was carried on in 1836, and, during the continuance of the Commission, in other newly created districts also, this charge has continued, and extraordinary tithe has been since rigorously enforced. Since the expiration of the Commission other districts have been officially declared, as provided for by the Act cited; but in districts not declared, and where extraordinary tithes were not originally levied, no such charge could be made.

It will be seen that had this plan not been adopted the ordinary tithe of the parish would have been increased on account of the value of the extraordinary crops being added to the ordinary produce; so that the arrangement at the time was fair and just.

Owing to the change effected by foreign competition in hops and other farm produce, this charge was felt by growers to be vexatious; and, as is usual, agitation manifested itself, and the result has been the passing of the Act entitled the "Extraordinary Tithe Redemption Act, 1886" (49 & 50 Vict. c. 54). This Act, condemned by some as hasty and imperfect, seems to meet the case as well as such could be met, when confiscation would have been unjust and impolitic.

The Act first declared that from the date of the passing of the Act (25th June, 1886) no extraordinary charge should be levied under the Tithe Commutation Acts on any hop grounds, orchard, fruit plantation, or market garden, merely cultivated as such. Thus all recently planted areas are free from this burden, and legislation rests only with the charge in existence at this date. It is not necessary here to follow the Act in all its ramifications, but simply to explain its main principles.

These are, that as soon as may be after the passing of this Act the Land Commissioners shall ascertain and certify the capital value of the extraordinary charge on each farm or parcel of land in each parish in England and Wales, where such charge exists. The amount of this capital sum is left to the discretion of the Commissioners, but the considerations with regard to their inquiry are clearly laid down in sect. 3 of the Act.

When this capital sum has been certified the charge in future shall be an annual rentcharge equal to 4 per cent. on such capital value, in lieu of the extraordinary charge, which shall cease on the half-yearly day of payment which shall immediately precede the date of the certificate.

It must be clear that if this were a perpetuity the payment under the commutation would remain the same, but as the charge exists only whilst the special cultivation continues, the amount payable will be more or less in accordance with the probability of the continuance of such a course of husbandry. From the certificates made it ranges from twelve to sixteen years' purchase. For example—let the extraordinary charge be 100*l.* a year, and sixteen years' purchase be the certified capital value, or 1600*l.*, the charge in future would be, at 4 per cent., 64*l.* It must, nevertheless, be remembered that this reduced annuity becomes a charge for ever until redeemed.

It becomes, too, a rentcharge, and has priority over other charges. It becomes, also, a rentcharge pure and simple, and not like ordinary tithe rentcharge, a charge on the produce of the land.

Redemption of the charge.

The redemption of the charge is rendered simple, and probably it will be resorted to from time to time. It is—if the person entitled to the charge is the incumbent of a benefice—met by a payment of the amount of the capital value of the extraordinary charge to the Governors of Queen Anne's Bounty, the receipt of whose treasurer shall be a sufficient discharge for the same. If the person entitled to the charge is absolutely entitled to the same in fee simple in possession, the owner may, after giving one month's notice, pay or tender to him the amount of the capital value of the same, or any less sum as may be agreed upon. In any other case the owner may pay the capital value of the said charge into the Bank of England, to be placed to the account of the Paymaster-General in the matter of the landowner and tithe-owner (naming them).

The Commissioners will, on proof of such payment or tender having been made, certify that such charge has been redeemed. On receipt of this certificate the land shall be absolutely freed and discharged from the charge.

Section 7 throws the payment of the rentcharge upon the landowner, and renders any agreement or arrangement to the contrary invalid.

Land agents should bear this in mind, and see that in the letting of hop land the rent is increased to the extent of the rentcharge.

Recovery.

The rentcharge may be recovered by action in Her Majesty's High Court of Justice or a County Court, or in the same way that rentcharge, in lieu of ordinary tithe is recoverable—*i.e.*, by distress or by entry upon and perception of the rent and profits of the land.

The rentcharge is not subject to any parochial, county, or other rate, charge, or assessment.

Repairs.

Repairs are always a difficult subject, and, as some observation upon it will be made in the legal supplement, it is perhaps not advisable to dwell upon it here. But it may be noticed that the basis of the contract should always be that the premises are in good and tenantable repair at the time of entry by the tenant, and the liability undertaken by him should be worded in accordance with this assumption. If at the time the lease is signed it is agreed by the parties that work remains to be done by the landlord in order to put the premises in tenantable condition, this work should be clearly and specifically defined in the lease, and care should be taken to execute it forthwith, and to obtain from the tenant an admission that it is executed, as otherwise the tenant may attempt to get rid of the liability on his own covenant by alleging neglect by the landlord to do what he had undertaken. Assuming the premises to be in repair, the tenant for a term of years will always be willing to execute all repairs during the term of his lease, provided his landlord supplies him with the necessary material.

Haulage of material.

The material may be found, either in the rough or converted, on or within a reasonable distance of the farm, say ten miles; but the tenant should generally haul it a reasonable distance at his own expense. Where the estate employs a saw-mill, the timber may with propriety be converted, for the use of the tenant; a small charge being made for this if deemed advisable.

Power of agent to inspect buildings.*

A clause should also be inserted which will enable the agent to inspect the buildings at all reasonable times; and providing that in the event of repairs being needed, or in the event of wilful neglect, he should be able to give notice in writing that the specified matter needs attention; and should the same not be performed in a workmanlike manner within a reasonable time (the time being specified), he should be at liberty to perform the same and charge the tenant with the amount.

Outgoing tenant's liability to repair.

At a change of tenancy the state of repair needs particular attention, as, in the event of these repairs not having been duly executed by the outgoing tenant, he must be called upon either to do them, or allow a deduction from the amount of the valuation to the extent of the amount required for such purpose; such amount being arranged by qualified surveyors.

Although the matter is primarily one between landlord and tenant, it is in practice essential to the incoming tenant to see to it, as he may otherwise, when he enters finally upon his holding, find that he has incurred unintentional liability.

Insurance.

Insurance is a matter upon which different opinions exist. Some consider that the insurance of the buildings should fall upon the tenant, he producing his vouchers for payment of premiums at each audit, and either providing for the payment of the sum assured in the event of fire to the landlord (who on his part should enter into a covenant to immediately rebuild); or else undertaking to expend the money himself in rebuilding. Others consider that the landlord should insure all his own buildings, wheresoever situated, and covenant to immediately rebuild. We agree with the latter opinion, and strongly recommend the subject to the attention of landlords. Let them insure their buildings in some first-class office, and authorise their bankers to pay the annual premiums, and so prevent the lapse of insurances by forgetfulness or neglect. In the event of fire, they will then, of course, immediately commence rebuilding, and, if the tenant suffers much loss or inconvenience beyond what he himself ought to have provided against by means of a private insurance, a reasonable reduction of rent may be allowed during the progress of the building.

---

* *See* Agricultural Holdings Act, 1900, upon this point:—Section 5 enacts as follows: "The landlord of a holding or any person authorised by him may at all reasonable times enter on the holding, or any part of it, for the purpose of viewing the state of the holding."

Reduction of rent during rebuilding.

But, as a rule, we object to any *covenant* by the landlord to allow a reduction of rent during rebuilding. The property is in the hands of the tenant, and it is his duty, and not the landlord's, to take all reasonable precautions against it being burnt down. If such a covenant is admitted the whole burden of the disaster falls upon the landlord. There is a two-fold loss to be guarded against. Firstly, there is the loss of the buildings of which we have spoken, and which the landlord is sure to see covered by an insurance, either by himself or the tenant. Secondly, there is the tenant's loss in business or convenience, a loss represented by the amount of rent which he has to pay for a non-existing thing. This loss cannot be guarded against by insurance, but must be met by the care and vigilance of the tenant. If this loss is removed by covenant, the need for vigilance will be removed too.

Plan for purposes of insurance.

The following plan and statement illustrate a method of arranging the matter which was recommended to the writer by a gentleman of great experience, and which has been found very useful.

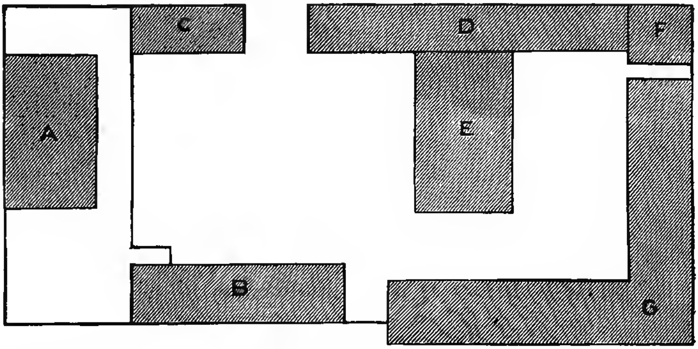
The plan is made upon the estate, and then forwarded

Chap. I. Sect. 3. *The Subject-Matter of the Lease.*

to the insurance office, and the policy, based upon it, is made out. Copies of these plans should be kept by the agent for reference, as more handy for casual purposes than the policies themselves. Mistakes also are rendered almost impossible, provided care is exercised in the execution of the plan.

Copy of Plan for Purposes of Insurance.

Home Farm *Parish.*



Eight hundred pounds on the following, viz.:

On farmhouse, brick and tile, lettered A	£300
„ cart-shed near, timber, stone, and slate, lettered B	50
„ piggeries, timber, stone, and slate, lettered C	25
„ stable and cow-houses, stone and slate, lettered D	150
„ barn and stables, timber and slate, lettered E	150
„ granary, timber, stone, and slate, lettered F	25
„ range of sheds, stone and slate, lettered G	100
	£800

No. of policy, 147,866

Cultivation. Restrictive clauses.

It was at one time necessary to insert in leases restrictive clauses as to cropping. The object of this was to prevent the too constant repetition of exhaustive crops. Artificial manures and oilcake were unknown articles, and it was difficult to give back to the soil what was taken from it. The raising of two corn crops in succession was looked upon as a flagrant act, and one which brought down upon the offending tenant the weight of the landlord's family solicitor's wrath and displeasure. The growth of potatoes was also strictly forbidden, on account of it being a crop taken from the land, and not fed on the farm like the ordinary root crop. The course generally laid down was the Norfolk or four-course rotation, *i.e.*, roots, barley, clover or pulse, and wheat. In those days this plan was a wise and just one, and necessary to secure a balance of plant food.

Two corn crops in succession.

Four-course rotation.

Restrictive clauses no longer required.

Times have changed, however. Men of science have shown us, not only what the various plants require, but where and how to procure the necessary ingredients. The use of oil and cotton cake and artificial fertilisers has entirely revolutionised agriculture, and enabled us to omit from our leases these now objectionable clauses. To bind an agriculturist at the present day to any strict course of husbandry is not only unwise, but almost impossible. Barley after wheat, for example, is now a recognised mode of culture, and will probably become more and more the practice. The reason of this is so evident as to show the unreasonableness of disallowing two corn crops in succession. Barley grown after swedes fed off the land, is often sown late, and necessarily upon a new furrow. The result is a flaggy crop, with a thin grain; and, from the amount of straw, more time is necessary to fit it for stacking, thus exposing the grain and causing discoloration. When grown after wheat, these evils are avoided. The seed can be sown early on a furrow that has been exposed to the winter frosts, and the roots take a firm hold by the time the genial warmth of spring exerts its influence upon the young blades, thus giving vigour to the plant, a firm straw, that will stand up and bear a heavy head, an early maturity, and a plump grain. Under this course, too, the sowing of clover seeds with the barley is avoided —often a source of difficulty at harvest-time, rendering,

Barley after wheat.

as it does, the rapid carting of the barley a matter of impossibility.

These cropping clauses must therefore vanish from our leases, and we must secure the fertility of the soil by a careful selection of tenants, and by watching the course of their farming, to see that nothing is done which is clearly bad husbandry.

Good husbandry implied by occupation.

The fact of occupation alone will imply in law an obligation to follow the rules of *good husbandry*. The landlord, therefore, is secure to a certain extent when no written contract exists at all.

It is possible, without injuring the interests of the tenant, to provide for a return to the four-course shift during the last few years of the lease. This is a matter open to the judgment of the agent. But the compensation clauses, to which we shall presently allude, are the most to be relied upon for securing good farming up to the end of the term.

Consumption of hay, straw, &c.

Up to a recent date, and to a very great extent even now, the sale of hay and straw has been strictly forbidden, either by the covenants of the lease or the custom of the country. For distant outlying farms, surrounded by bad roads, the restriction is a wise one, often, however, unnecessary on account of the impossibility of drawing such heavy produce away. But where farms are situated near towns or railways, the restriction is certainly unwise. For example: Suppose a farmer is able to sell straw for 2*l.* or 2*l.* 10*s.* a ton, delivered at a railway station within one or two miles of his farm. A railway truck will hold, perhaps, two tons, or 5*l.* worth of straw; this 5*l.* will bring back to the farm fifteen tons of good town stable dung, or nearly three times the quantity the two tons of straw would make in the farmer's own yard.

Again, with regard to hay, two tons of hay at 3*l.* 10*s.* per ton will more than equal a ton of oil cake, which will yield 3*l.* of manurial value—more by far than the hay would produce if fed at home.

It is clear, however, that if the sale of hay and straw is permitted, it can only be upon the terms of an equivalent being returned in purchased food or manure; otherwise the productive power of the land will soon deteriorate. The provisions we have adopted will be found in clauses 21—23 of the lease, and amount simply to this, that a portion of the money, equivalent to the manurial value of the hay and straw sold off, shall be expended in purchasing oil or cotton cake, or artificial or other manures, proof of such purchases being given by the production of vouchers, and a statement of the various sales being made, at every audit if so demanded.

Equivalent of hay and straw sold.

The removal from the premises of the dung produced upon them would be so clearly against the rules of good husbandry that it is unnecessary to do more than allude to it.

Compensation at the expiration of the term.*

One of the most important questions for consideration in letting land is the adoption of some provisions which will secure such a cropping and treatment of the land that it will, at the termination of the lease, revert to the landlord in an improved, instead of in an exhausted, condition, so as to fit it for re-letting at an advanced figure. Whilst a tenant feels that his capital is insecure, he will naturally, towards the end of his lease, put as little into the land, and extract as much out of it, as he can. He will at least try and recover from it the value of all the manure that he has put in. In other words, he will "whip" the land, to recoup himself for his unexhausted capital lying in it, if he knows that he will be unable to obtain that capital from his landlord. To guard against this, the lease or agreement should provide such "compensation clauses" as will induce the tenant to farm well up to the last day of his term.

---

* The Agricultural Holdings Acts, 1883 and 1900, which will be hereafter described, renders provisions as to compensation less necessary. In fact, so far as compensation for ordinary acts of improvement is concerned, there is no reason why the lease should not be absolutely silent.

The question of compensating the lessee for what are commonly called "unexhausted improvements," or, in other words, for the expenditure of capital out of the ordinary and necessary course of husbandry, will be discussed in the next section. Our lease (Example A.) makes no provision for any such matters, except in so far as the application of purchased manures or the consumption of purchased foods may come within that category.

For, as a rule, the compensation clauses need only touch the question of purchased food, unconsumed straw, hay, and dung, and the ordinary acts of husbandry of which the tenant cannot reap the full benefit, either because the benefit of them extends beyond one year, and his lease expires in the meantime, or because, although they may be called annual operations, his lease expires between the season for performing them and the season for profiting by them. Of these acts of husbandry, the application of purchased manure may fairly be considered a part. It is to be noted that the custom of the country usually, or often, entitles the tenant to compensation for all these matters, in the absence of any agreement at all. And the custom of the country in all agricultural matters may be insisted upon by either party, if not varied, or excluded, by written agreement, just in the same way as though it were a part of the law of the land; subject to this important qualification, that the party insisting upon it must prove its existence. Recent decisions, however, have proved that custom of country cannot be relied on, even when supposed to be known, when it becomes necessary to resort to a County Court for final decision. When left entirely to the decision of valuers, reasonable evidence of custom generally carries the day; but when the matter is referred to the judicial ruling of a man of law, the proof required is so strict that it is often difficult to produce. For the establishment of a binding custom at law it is necessary to show that the custom is "certain, known, generally recognised and acted upon, so that parties entering into

Rule of custom of country.

contracts within its local range may be assumed to have done so with knowledge of the usage."

Under these circumstances, therefore, it seems desirable to disregard custom altogether, and resort to well-conceived written agreements. Tacit reliance upon custom, or verbal arrangements founded upon it, must always be liable to misconception and litigation.

Custom, as it affects purchased food.

But custom will not generally touch the question of purchased food, and as to the ordinary acts of husbandry (of which the application of purchased manure is treated in the lease as a part), the tenant may fairly object to relying upon his chance of getting payment from an incoming tenant, who would by the custom be the person primarily bound to pay him. Indeed, there might be no incoming tenant, and as, in that case, the custom would in the absence of agreement fix the landlord with the liability to compensate according to the custom, it is clearly to the landlord's interest to have his liability carefully defined by the lease.

Compensation for acts of husbandry.

The question of purchased food will be found alluded to as one of "unexhausted improvement;" the several acts of husbandry to be compensated for will be discussed in the chapter on valuation.

Temporary occupation of buildings by outgoing tenant after expiration of term.

There is a further observation to be made under this heading, namely, that if (see Example A., clauses 32 and 34) the letting is a Michaelmas one, provision must be made for occupation by the outgoing tenant of barns, stabling, &c., and for part or whole of the house, until the month of May following, to enable him to thrash his corn. This is not necessary in a Lady-day entry, which is one of the advantages of that season. The point will, however, be noticed hereafter.

Lessor's power of re-entry.

In the event of non-payment of rent within a specified period, generally three weeks from the date of collection, whether notice or not has been given, it is necessary to give the landlord power to re-enter and occupy as in his former state. (See Supplement.) The power is also generally made to come into operation in the event of any breach of covenant; and this takes in a point to which the agent's attention should be particularly directed, as such a wording of the clause adds greatly to the landlord's protection, and is not invariably adopted. The power may also be made operative in case the tenant becomes a bankrupt, or liquidating or compounding debtor; but this is not essential if the landlord is enabled to re-enter so soon as any term or agreement in the lease is broken.

SECTION IV.

Compensation for Unexhausted Improvements.

AGRICULTURAL HOLDINGS ACT, 1883—ERECTION OF BUILDINGS—LAYING DOWN OF PERMANENT PASTURE—MAKING AND PLANTING OF OSIER BEDS—PLANTING HOPS—RECLAIMING WASTE LAND—DRAINAGE OF LAND—CHALKING LAND—CLAYING LAND—CLAY-BURNING—BONING LAND—LIMING AND MARLING OF LAND—CONSUMPTION OF CAKE AND OTHER PURCHASED FOOD—APPLICATION OF ARTIFICIAL MANURES—ADVICE TO LAND AGENTS.

Agricultural Holdings Act, 1883.

The ordinary acts of husbandry, compensation for which is always sufficiently provided for either by custom or contract, are to be distinguished from what are called "unexhausted improvements." Concerning the latter the Legislature, thinking tenants insufficiently provided with means of compensation, pretended to come to their assistance by the Agricultural Holdings Act, 1875. But, as this Act left the parties at liberty to exclude its operation by agreement, it practically failed in its operation.

A further Act, therefore, was passed in 1883, styled the Agricultural Holdings (England) Act, 1883 (46 & 47 Vict. c. 61). This Act repealed that of 1875, besides fundamentally changing the whole of its provisions. The present Act differs from its predecessor (1) by being inalienable, and (2) by rendering the amount of the com-

CHAP. I.
Sect. 4.
Compensation for Unexhausted Improvements.

pensation payable to the tenant a sum equal to the value of the improvement to the incomer. It will be doubtless remembered that the Act of 1875 gave compensation based upon the expenditure, and drew no distinction between a true and a so-called improvement. The Act, therefore, now in force, though open to question in some of its features, is sound in principle, and has worked well. It has, too, gone a long way towards settling the vexed question of tenant-right. It has not, of course, gone far enough to satisfy men of extreme views, and yet the principle enunicated is so clear and decisive that open hostility to its operation is impossible.

To render this clear we must show by an example the difference between the two Acts:—By the Act of 1875, if a tenant carried out an improvement under class 1, 2, or 3, he received when he quitted a proportion of the sum expended in accordance with the period of its duration named in the Act; and he received this sum if the operation failed in its effects. No risk, therefore, so far as compensation was concerned, accrued, to the operator.

Under the Act of 1883, however, the whole of the risk is thrown on the tenant, for the compensation he will receive is the value of the improvement to the incomer, irrespective of the original expenditure. If he has been unwise in his expenditure, it is possible that no compensation may be awarded him by the valuer, and, on the other hand, if he has been judicious he may receive more than he has expended.

The student should here refer to the terms of the Act as set out in the Supplement (*post*). It is not our intention here to do more than allude to the Act, and to show how it affects the letting of land, but hereafter it will be fully explained. As its provisions cannot be escaped by agreement it seems unnecessary and unwise to endeavour to do so by compensation clauses in the lease. If, however, these are reasonable they may be substituted for compensation under the Act.

Application by tenant to perform special acts.

So far as improvements are concerned which are found in the first part of the first schedule, the tenant can only claim compensation provided he has, before executing one or either of them, received the written consent of the landlord; therefore the agent may still exercise his judgment with regard to such application, and either altogether refuse his consent, or undertake to carry out the improvement on the part of the landlord. Should he adopt the course of allowing the tenant to expend his own capital in the matter with a view to future compensation, it is to be supposed that when he gives his consent he will also make provision for this, so that there may be no uncertainty at the expiration of the tenancy.

Whether landlord's or tenant's capital should be employed.

But with reference to those acts the question may often arise whether they are best performed by the application of the landlord's capital or the tenant's. In our opinion those acts referred to under Part I. in the Agricultural Holdings Act are such as should be, with a few exceptions, undertaken by the landlord; such exceptions are:

Laying down of permanent pasture.
Making and planting of osier beds.
Planting of hops.
Reclaiming of waste lands.

Erection and enlargement of buildings.

With regard, for instance, to the erection and enlargement of buildings, one of the subjects comprised in Part I., the expenditure of tenant's capital for this purpose is not to be encouraged. When buildings are really required, most landlords, upon a fair payment of interest, will carry out the work. When the landlord cannot find the sum necessary, he is able to borrow and to secure the repayment of the loan by creating a rentcharge upon the property sufficient to pay capital and interest; so that, if the rentcharge is borne by the tenant, there is really no excuse for the non-carrying out of necessary improvements. It is to the landlord's interest to leave the tenant's capital unshackled for the direct benefit of the land. Good and sufficient farm-buildings are of course necessary, and money judiciously

Compensation for Unexhausted Improvements.

laid out in this respect will yield a fair and reasonable return; for the farm will let at a figure proportionately higher, to the extent of, at least, 5 per cent. upon the outlay. For example: Supposing a farm of 500 acres is let with old and insufficient buildings for 450*l.* a year, or 18*s.* per acre. Let 1500*l.* be laid out in the building of cottages, warm sheds, covered yards, and other conveniences, and we have an extra sum of 75*l.* a year as interest, to meet in the shape of extra rental, or 3*s.* per acre only—an increase of rental which most tenants would consider to be made up to them by the increased accommodation.

Act in Part II.

The act comprised in Part II., namely, *Drainage*, should also, in our opinion, be performed by the landlord, and we think it likely that tenant's capital will be seldom employed in this improvement. It will be seen by reference to the Act (*post*) that the Act of 1883 takes this special improvement out of the first class in the Act of 1875 and deals with it separately.

Acts in Part III.

Those acts, however, comprised in Part III. most concern us here. These acts are:

Boning of land with undissolved bones.

Chalking of land.

Clay-burning.

Claying of land.

Liming of land.

Marling of land.

Application to land of purchased artificial or other purchased manure.

Consumption on the holding by cattle, sheep, or pigs, of cake or other feeding stuff not produced on the holding.

The improvements caused by all these acts should, in our opinion, be considered a *bonâ fide* tenant's improvement, for which he should be allowed fair compensation on quitting.

We will now proceed to discuss in order the various operations and applications which appear suitable for performance by the tenant, and explain the circumstances under which they may be deemed necessary and beneficial; and the mode of performing them, and the amount of compensation to be given.

Laying down of permanent pasture.

A tenant, without special agreement, will not, of course, desire to lay down permanent pasture unless he has several years still to run, so that he may expect to reap the advantage of his outlay. If his tenancy is of short duration, and he feels that such an act would be beneficial to his holding, he will, if he is wise, consult his landlord and obtain his sanction. As the laying down of land to permanent pasture is generally looked upon in these times as wise and judicious, he is not very likely to meet with a refusal. The sanction, however, if given, should be conditional on the work being done thoroughly, and with care and judgment, and on the seeds being bought from an approved firm; for there should be no haphazard about a work of such an important nature. In some cases the landlord may possibly be willing to find the seed, and the tenant the labour. In that case the agreement (which should be in writing) to give compensation may be made on the following scale:—If the term expire the first year after the operation, the tenant to receive the full cost of the operation if correctly performed; if the second year, 15*s*. per acre; if the third year, 10*s*. per acre. But beyond that period no compensation should be allowed.

If, on the other hand, the tenant finds the seed as well as the labour, the figures may be raised in each case 20*s*., 15*s*., and 10*s*. respectively. There may, of course, be reasons why the laying down of certain fields in pasture may be of doubtful benefit; in fact, a future tenant may consider the value of the farm decreased by the alteration.

The land chosen should be near homesteads, low-lying bottoms well watered, oddly shaped fields difficult to cultivate, or otherwise specially adapted. For further information on the laying down of land to permanent pasture, the reader is referred to the chapter on the "Home Farm" (*post*).

Making and planting osier-beds.

The method of planting osier-beds is fully explained under the head of "Willow" (*post*), and it is, therefore, unnecessary to state it here. The operation is one that will only occasionally present itself to the land agent as the act of a tenant. When, however, a tenant desires to perform it, his offer to do so should be in most cases accepted as a decided improvement, and worthy of encouragement. If the tenant has a considerable time still unexpired, he may be content to perform the operation without compensation, as the osier crop soon reaches a profitable growth, and quickly repays any outlay that may have been incurred. But in case he holds by the year, or has only two or three years of his lease still to run, he is not likely to undertake the operation without first arranging a fair basis of compensation. Such a basis appears to us to be:

If the term expire the first year after the planting—the full cost.

If the second year—two-thirds.

If the third year—one-third.

Planting hops.

Planting hops is an expensive operation, and is generally looked upon as a marked improvement to an estate, so that the tenant can scarcely need the sanction of the landlord; if, however, the planting is a new departure, the previous permission of the owner will be required, as such an act would probably be contrary to the rules of good husbandry. If the farm is known as a hop farm, such permission will not be needed if the planting is for the purpose of maintaining the original area. Nevertheless, to avoid misunderstanding, arrangements should be made in all matters of this kind, which are outside the ordinary paths of cultivation. When the term is short, and the tenant seeks compensation, he must apply for a written permission, as he cannot expect his landlord to submit to a demand for compensation, if the application is first made when he leaves the farm. Neither has he, without a written consent, any legal claim upon his landlord at all. One matter that must weigh with the agent is, whether the proposed planting will entail the necessity for extra kiln room. If this is the case, it at once opens up a fresh outlay, and consequent increase of rent in shape of interest. This is mentioned simply to impress upon the reader the necessity for foresight and care.

Compensation for three or four years, by which time the new garden will be in full bearing and consequent profit, will fairly meet the case, *e.g.*, a fair basis for compensation seems to be—

If the time expire the first year after planting—full cost.

If the second year—full cost.

If the third year—three-fourths.

If the fourth year—one-fourth. For further information in hop cultivation (see *post*).

Reclaiming waste land.

The reclaiming of waste land is an operation of great importance upon many estates; but it is seldom undertaken by tenants in England, though it is the common practice in Ireland. When, however, tenants perform it, the best compensation that can be given them is a lease of considerable length, at a nominal rent. If this is resorted to, it is of course necessary to secure a man of capital and character. To arrange a basis for cash compensation before the reclamation is a very difficult matter; for it is impossible often to estimate either the extent to which the tenant may within a short period of years recoup himself for his outlay, or the additional value which that outlay may, at the end of such a short period, have given to the land. To go generally, however, into the subject of reclamation is not within the purpose of this work.

We come next to the operations under Part III., all of which may be performed by the tenant at his own discretion and without permission, and for which he may claim compensation when he quits his holding. There is, however, this slight restraint, namely, that during the last year of his lease, or after notice to quit has been given or received, he cannot, without permission, bone, chalk, burn clay, lime, or marl his land; that is, if he desires compensation.

Compensation for Unexhausted Improvements.

This is a reasonable and sensible restriction, as he could not benefit himself by such expenditure, and might unnecessarily burden his successor or landlord.

These operations are more or less local, so that we shall dismiss them with only a few remarks. It would be impossible to deal with each in detail, and yet our work would be incomplete if we entirely passed them by. Our remarks may induce the student to search further into a subject which cannot fail to be interesting in certain districts.

Chalking land.

Chalking of land, a most important operation, must of course be confined to those farms where chalk is procurable close by, as the heavy cartage makes it impracticable in any other. In any case the tenant should not expect large outlay for this purpose to be made good to him by compensation. It may rank for compensation for a period of ten years.

It acts to a certain extent as lime, but is more slow in its effect; on heavy clays, however, the mechanical effect of chalk is very great, and will probably outweigh the chemical action, from a purely agricultural point of view. It should be applied in winter, or better still, in autumn, so that the frost may pulverise it; frost being a most perfect pulveriser. Chalk contains such a large amount of water that the expansion caused by the act of freezing quickly bursts large lumps on which a hammer has but little effect. The action of chalk will be explained more fully under the head of "Liming."

Claying land.

Claying is a heavy operation, but one nevertheless of great importance upon light sandy soils, provided the supply of clay is close by. Under such conditions, it is a proper subject for compensation. The amount of compensation, however, must be determined on the spot after full inquiry—(1) as to the necessity or advisability of the operation, (2) as to class of clay, (3) as to the position of the clay pit, and so on.

Clay burning.

The burning of clay is an important operation when the soil is very plastic and tenacious. Burnt clay never returns to its original state when exposed to the action of the weather, so that when mixed with a heavy clay it serves to make the soil more kind and workable. To conduct this operation thoroughly, however, is very expensive, and it is seldom resorted to. Where it is done with the landlord's concurrence, he may properly regard it as a suitable subject for full compensation. No rule can be laid down to guide the valuers. They will have to determine the value after full inquiry; but in a stiff clay soil they will doubtless approach the matter with minds open to conviction.

Marling.

Marling was once greatly resorted to, as the pits in many parts of England fully testify. Marl is carbonate of lime in a soft state, and mixed with clay and sand. Marls vary in value in accordance with the carbonate of lime they contain. Some contain but little, say 10 to 20 per cent., others as much as 80 per cent. Beds of marl are found in the greensand formation containing a considerable quantity of phosphate of lime. When this is the case, it becomes a very valuable dressing. This substance is found in nearly all marl, but often to such a limited extent as to be almost untraceable. When found, however, in the greensand, it sometimes amounts to 10 per cent.

The method of testing marl.

This operation, therefore, when the lime contained in the marl is of fair proportion, may be classed as highly effective, and one that should be fully encouraged. It is important, however, that the agent shall be alive to the quality of the dressing; he may otherwise pay heavily for a dressing of simple clay, of little or no value, possibly even injurious. He can test the substance fairly well by pouring on a heap of the substance a weak solution of muriatic acid. Effervescence will be produced if carbonate of lime is present, for the carbonate of lime consists of carbonic acid and lime in combination; but the lime has a greater affinity for the muriatic acid than for the carbonic; and therefore immediately unites with the former, and releases

Compensation for Unexhausted Improvements.

the carbonic acid, which escapes in gaseous form, causing the effervescence. This operation, when the marl is really good, may rank for compensation for five years.

Boning land.

Boning requires fuller consideration, as it is more resorted to at the present time than many of the operations already described. Bone ranks high as an improver, and, generally speaking, the operation is one which merits full compensation. The dressing is principally applied to pastures, especially in those districts where cheese is made and where young stock are reared, the object of it being to return to the soil the phosphate of lime extracted by the constant production of milk and bone.

Visible effect of bone-dressing.

But little effect is visible to the eye, and many have very little faith in the dressing on this account. We have in one case found by careful experiment that the weight of hay obtained from a plot dressed with half-inch bone has been less for the first two years than upon the plot unmanured, although the third year has shown a slight increase (see the list of "Experiments upon Top-dressing of Pastures," *post*).

Object of bone-dressing.

But, although visible effects must not be looked for, it is nevertheless a valuable dressing. Its tendency is to promote the growth of the finer grasses. The fact that every ten gallons of milk contains about half a pound of bone-earth, and every 100lb. of cheese contains 7½lb. of the same substance, is of itself suggestive of the necessity for restoring to the feeding ground the substance so extracted from it. If a pasture is grazed for years by cows, and no attention is paid to this important fact, it would seem that the natural result would be the exhaustion of the soil, so far as regards this particular element.

Again, when we consider the amount of the ingredients constituting bone-earth which are requisite to supply young stock with bone, and how, year after year, pastures are grazed and no attention whatever paid to this, the probability would seem that our stock must degenerate for want of necessary material, unless we replenish the exhausted stores. In Cheshire and other cheese-producing counties we believe the application of bone is made compulsory, and it ought to be so to some extent on all farms where pastures form an important feature of the holding.

Compensation.

The plan which commends itself to us is to dress to the extent of 7cwt. per acre once in seven years, giving compensation for the whole of the period, *i.e.*, one-seventh of the dressing being treated as exhausted each year.

Adulteration of bone-dust.

We recommend the use of half or quarter-inch bone, *i.e.*, crushed bones that have passed through meshes of such sizes; and we give the preference to raw bones on account of the gelatine they contain, this being an extra nitrogenous manure, although the presence of gelatine retards to some extent the necessary decay. Bone-dust is, of course, more rapid in its action, but it is so liable to adulteration, and the adulteration so difficult to detect, that its use is attended with considerable distrust. Applying once to one of the first manure manufacturers in England for bone-dust, their reply was that they could supply bone-dust, but only at considerable expense, as it must come direct from their own works, for they could warrant none bought elsewhere.

Compensation to apply to undissolved bones only.

Compensation over so extended a period should, however, be allowed only when the dressing is of raw or undissolved bones. When dissolved their action is more rapid, and therefore the effect is less permanent, and the operation merits compensation for a shorter period, only such compensation, in fact, as would be applicable to a dressing of artificial manure.

Price of bone.

The cost of boning is heavy. The market price varies, but 9*l.* 10*s.* per ton may be taken as an average price, to which must be added cost of application. It is evident, therefore, that, though absolutely necessary, the application must be made with judgment. Soils vary much with regard to the phosphate of lime they contain; for instance, the soils of the *upper greensand* are rich in such ingredients, consequently the application of bone to such land is less imperative than upon other soils where they are almost absent. This proves the necessity for some knowledge of geology in the proper management of estates (see *post*, Chapter VIII.).

Application of undissolved bone to arable land.

Undissolved bones are sometimes applied to arable land, and the practice is to be much recommended. Where, however, it is resorted to, compensation must extend only to three years, as the conditions render the action more rapid.

Application of gypsum.

Gypsum, or sulphate of lime, is a dressing very much ignored and overlooked in the treatment of grass lands, and clover and sainfoin leys. The reader is referred to the results of some interesting experiments (*post*). The application is a cheap and most effective one on land containing but little lime. The cost will not exceed 1*s.* 8*d.* per hundredweight, and the quantity per acre may be stated at from 5cwt. to 10cwt. Compensation may be safely given for a period of three years.

Liming.

Liming is an important operation upon most farms, and one too often neglected. There are few soils that would not repay a dressing of lime. All plants need lime directly; it also acts upon the vegetable matter or "humus" contained in the soil, and renders it soluble, and fit for plant food; it combines with the acids in the soil, and removes sourness, and also upon mineral matters, rendering them soluble and fitted for entering into the roots of growing plants.

Reasons for applying lime.

The reasons for applying lime, and not chalk or other limestone, are two-fold. In the first place this course is a great saving of labour. When chalk or other limestone is burnt in a kiln, the carbonic acid and water which it contains is driven off, leaving behind the lime only. This substance is quick or hot lime. If water is poured upon this, or if it is left exposed to atmospheric action, it falls into a fine powder, and it is said to be "slacked." If applied to land in its quick or caustic state, its action is more rapid, but this application is only recommended in the reclamation of peaty or heavy clay soils. It is best to leave it in

CHAP. I. Sect. 4. *Compensation for Unexhausted Improvements.*

a heap for a year, when by the action of the atmosphere it crumbles gradually, and having a great affinity for carbonic acid, attracts it from the air, and again becomes a carbonate, but reduced to a fine state of powder, and much lighter than in its original form. A ton of chalk when burnt will produce only 11¼cwt. of lime, therefore, if we cart chalk, we cart 8¾cwt. in every ton of matter not required. Such a great saving in cartage is effected only in the event of the lime being carted in a caustic state; if allowed to slack (or slake, as it is often called) it gains weight, one ton of pure lime becoming 26½cwt. of slacked lime. But in either case, it is clear that a great saving is effected in labour. The other and more important reason for the use of lime is, that in the state of powder it acts at once and vigorously.

Lime to be applied superficially.

The application should be superficial, its tendency being to work down. It should not, therefore, be ploughed in, but be used as a top-dressing.

Quantity required.

The quantity used will depend upon the length of time between the applications. Some prefer little and often, others a heavy dressing once in eight or ten years. A full dressing is 1 bushel to the rod, or 160 bushels per acre. This is expensive, and only necessary under extraordinary conditions. No rule as to compensation can be laid down, but it is a safe subject for full and free acknowledgment. The cost of the lime (perhaps sixpence per bushel), and of the cartage and application, can be easily obtained from the outgoing tenant, and the necessary amount of compensation can be reckoned in accordance with the time that has expired since the application. A full dressing, in our opinion, may be considered not exhausted till the expiration of seven years.

Compensation.

Consumption of cake and other purchased food.

It is as necessary for the land agent to provide compensation for the consumption of cake and other purchased food, as for the tenant to exact it, as it is this full feeding of cake and other purchased foods to the last day of the term that determines in a great degree the future letting value of the

Compensation for Unexhausted Improvements.

land. And it is not likely, as already expressed, that a tenant, shortly bound to quit a farm, will purchase food which he knows will only partially benefit himself, without feeling sure of repayment for that portion that lies buried in the soil. This portion is so exactly defined by analysis, that the basis of compensation becomes a simple matter of arithmetic. The only difficult matters are to be sure of the pureness of the article consumed, and of the actual feeding of it on the land. So much rubbish is still forced into the market that we have to use all our diligence to prevent the payment of compensation for an expenditure for which we have not a sufficient equivalent. These difficulties have been overcome, to some extent, by the *Fertilisers and Feeding Stuffs Act,* 1893. This Act, however, like many others, is easily evaded.

Effect of cake-feeding.

Those who have fed cake upon the land know well its marvellous effects upon the succeeding crop; the outline of the folds can be distinctly traced in the luxuriant growth and dark colour of the herbage. Upon those farms where sheep can be folded throughout the year there is no better plan of distributing manure than by the feeding of sheep; the heavy operation of the dung cart is much reduced, and the application is more effective. Also in pastures, where beasts are fed with cake, the benefit is very marked. As a matter for compensation it has this advantage—that what we pay for we see and feel before the year is out.

Compensation for cake consumed.

The amount of compensation is generally one-third the amount of cake consumed upon the farm during the last year of the term, provided such expenditure does not exceed that of the two previous years. The amount of one-third is fixed because the analysis proves that about one-third value of every ton of oil cake is left upon the farm in the form of manure. In case of cotton cake, about two-thirds are left, and this

CHAP. I. Sect. 4. *Compensation for Unexhausted Improvements.*

peculiarity is sometimes noticed and allowed for in compensation.*

We have not alluded to other articles of food; compensation can only be given for expenditure on such as may have been purchased, not for such as have been grown upon the farm, because, if this arrangement were departed from, there could be no production of vouchers, and a door would at once be opened for deception. If this difficulty could be overcome, the consumption of home-grown corn would, of course, merit the same compensation as for that purchased. The manure left from consumption of corn is, however, in our opinion, but slight, and one-sixth the value will probably suffice.†

It is necessary to draw attention to the corn consumed by working horses. In the Agricultural Holdings (England) Act, 1883, it is laid down in No. 23, Part III., as follows:—"Consumption on the holding by *cattle, sheep*, or *pigs*, of cake or other feeding stuff not produced on the holding." It is clear that the legislature did not intend that horses should be included in the list. In a primary sense, horses may have been included in the term cattle, but in practice the word cattle implies only horned stock, and any attempt to embrace horses in the definition would be clearly contrary to the intention of the legislature. It is, too, almost invariably accepted in practice, that the value of manure rendered by horses is too trifling to admit of compensation, and too much squandered on the roads and land to permit any fair estimate being made. It is, therefore, in my opinion, the correct course for valuers to strike out of the claim for corn consumed, all oats and Indian corn purchased for the working horses.*

---

* There is evidence of a desire on the part of valuers to introduce the manurial residue of feeding stuff, in place of a proportion of the market cost of such, in future valuations between outgoing and incoming tenants A resolution to this effect was passed at the Hampshire Provincial Surveyors' meeting. Further reference will be made to this important matter later when dealing with the Agricultural Holdings Act in greater detail.

† The Agricultural Holdings Act, 1900, permits compensation for corn grown and consumed. See *post*.

The compensation need not certainly apply to the whole bill of purchased foods.

The Act of 1883 renders these remarks to some extent unnecessary, as the tenant on quitting will be entitled, if he has brought the Act into operation, to the value to the incoming tenant. Our remarks, however, may assist the valuer in determining this value.

We believe the tendency is to place too high a value on the effects of the consumption of various classes of foods.

Artificial manures.

The application of artificial manure merits but slight compensation as applied to arable land. The benefit derived from them is so very transient that we are of opinion that the outgoing tenant reaps what he sows. This does not apply, of course, to such as may have been applied to crops growing at the time he quits. For this he will be paid as an ordinary act of husbandry of which he does not reap the benefit. Neither does the same principle altogether apply to pastures. If the reader turns to the list of "Top-dressing" experiments, he will find what a marked effect guano had for three years, and will see that for such a result substantial compensation can hardly be withheld.

Advice to land agents.

Let your leases be drawn up in accordance with each individual letting, and do not too strictly enforce a *set form.* Give liberty of action to a good man, but secure to yourselves a means of checking bad farming. Let your enforcement of due attention to the conditions of the lease involve the smallest possible interference with the tenant. Be ready with advice when applied for, be backward in giving it unasked. Be liberal in compensation agreements and otherwise, when the value of the holding will

---

* In Part III. of the First Schedule to the Agricultural Holdings Act, 1900, the question of horses in relation to consumption of corn is set at rest. See *post.*

Chap. I. Sect. 4. *Compensation for Unexhausted Improvements.*

be thereby advanced; but grant no terms without first instituting full inquiry. As you are the medium between the landlord and the tenant, remember that the interests of the two are identical, and that the tenant cannot be alienated in feeling from the landlord without injury to the latter.

It may be well to draw attention here to the advisability of having soils analysed before expending large sums on the application of artificial manures. Much money is yearly lost by artificial dressings being applied where they are not required, the soil being already naturally supplied. This is quite as great an evil as the acknowledged one of the careless purchase of spurious substances thrust wholesale on our markets.

If this were universally adopted it would be a great aid to valuers of tenant right in determining what must always be an element of great uncertainty. Such mechanical and partial chemical analyses may be made of soils for a small sum, and few small sums will be expended with such satisfactory results.

It may be instructive and interesting if to the above advice and opinions upon the subject of compensation for manurial improvements is added the *Scales of Valuation* as proposed by various Chambers of Agriculture.

LINCOLNSHIRE CHAMBER.

One-third of the cost of linseed cake, cotton cake, rape cake, or malt cake, and one-sixth of the cost of corn cake, malt, or other manufactured feeding stuffs of similar manurial value, which have been consumed on the farm during the last year of the tenancy; and one-sixth and one-twelfth respectively of the value of that consumed during the preceding year of the tenancy.

Dry Bones.—Applied to green crop consumed on the farm: the whole cost if used during the last year of the tenancy; half the cost if used during the previous year.

Artificial Manures.—The whole cost if used with green crops consumed on the farm during the last year of the tenancy; provided that the cost of such manure shall not exceed that of the two preceding years.

Chap. I. Sect. 4. *Compensation for Unexhausted Improvements.*

Lime.—The cost of lime, carriage, cartage, and spreading on a seven years' principle, that is, the allowance to be reduced by one-seventh each year until the period has expired.

Claying, Marling, Chalking.—On a twelve years' principle, the whole cost of the first four years, and one-eighth to be deducted each year for the remaining eight years.

Bones on Pasture Land.—Dry bones, on a ten years' principle.

Dissolved bones on a five years' principle.

NORFOLK CHAMBER.

One-third of the cost of linseed cake, &c., used during the last year, and one-sixth used during the preceding year of the tenancy. One-sixth of the cost of other purchased feeding stuffs used during the last year of the tenancy; no allowance for that used during the preceding year.

Bones.—Dry bones (not less than ¼in.) applied to arable land, upon a four years' principle. To pasture land eight years.

Lime.—On a six years' principle.

Claying, Marling, Chalking.—On a twelve years' principle, as in Lincolnshire.

On Fen land on a six years' principle.

CIRENCESTER CHAMBER.

One-third of the cost of purchased foods, including purchased corn, consumed during the last year of the tenancy.

One-sixth of the cost consumed during the preceding year of the tenancy.

DEVON AND CORNWALL CHAMBER.

3*l.* per ton on all oil cakes.

1*l.* 4*s.* per ton on purchased corn cakes, corn-malt, or grain, or other feeding-stuffs of similar manurial value which have been consumed on the farm during the last year of the tenancy.

Half the above sums for that consumed during the preceding year.

Bones (including carriage) used on pasture land as follows:—Dry bones on a seven years' principle; dissolved bones on a three years' principle.

In estimating the value of the manure that would have been produced on the holding by the consumption of any hay, straw, roots, or green crops, sold off or removed from the farm within the last two years of the tenancy, the allowance to be, 15*s.* per ton for hay, 8*s.* per ton for straw, 3*s.* per ton for roots; and a similar estimate to be made of the manurial value of any of those articles that may have been brought on to the holding during the same period.

Lime.—On a five years' principle on arable land; on a seven years' principle on pasture land.

SOUTH WILTS CHAMBER.

One-third of the cost, including carriage, for linseed cake, cotton cake, rape cake, beans, peas, and malt-dust; and one-sixth of the cost, including carriage, for other feeding stuffs consumed on the holding during the last year of the tenancy.

One-sixth and one-twelfth, respectively, of the cost of such feeding stuffs consumed during the year previous to the last.

Bones, undissolved.—On an eight years' principle if used on pasture. On a three years' principle if used on arable.

Chalking or Marling.—Full cost for the first two years, and after that to be reduced by one-tenth for ten years.

Clay or Turf Burning.—Full cost where no crop has been taken; one-third where only one crop has been taken.

Liming.—The full cost the first year, after that to be reduced by one-seventh for seven years.

Artificial Manures (exclusive of nitrate of soda and sulphate of ammonia) to green crops, whole cost applied to roots left unconsumed. Half the above sum if consumed.

Nitrate of Soda and Sulphate of Ammonia.—To roots, half cost, if unfed or fed, if applied during the last year of the tenancy.

To grass or pasture. Half the cost, if not mown, if applied during the last year of the tenancy.

In reduction of the above, for each ton *sold off* the holding:

Of hay of the last two years' produce	20*s.*
,, straw ,, ,, ,,	10*s.*
,, roots ,, ,, ,,	5*s.*

A similar estimate for such produce brought on during the last two years of the tenancy.

CHAPTER II.

FARM VALUATIONS.

SECTION I.

VALUATION GENERALLY.

VALUATION FROM OUTGOING TO INCOMING TENANT—VALUERS: THEIR APPOINTMENT AND PROCEDURE—VALUATION OF TILLAGES—ALLOWANCE OF RENT, RATES, AND TAXES—MICHAELMAS VALUATIONS: GROWING CORN, ROOT CROPS, PREPARATION FOR WHEAT FALLOWS, CLOVER LEYS—CLOVER AND GRASS SEEDS—STRAW AND HAY—FARMYARD DUNG—LADY-DAY VALUATIONS: HALF TILLAGES, WHEAT CROP, SEEDS, SAINFOIN ROOTS—SURVEY OF DILAPIDATIONS—FIXTURES.

CHAP. II.
Sect. I.
Valuation Generally.

FARM valuation is an important branch of estate management, and every land agent should have a full knowledge of the subject, whether he is called upon to act on behalf of his employer or not. He may, for instance, when farms usually let change hands, have to act in the capacity of valuer for his employer as outgoing or incoming tenant, as the case may be. Even if he be authorised to employ a practical valuer on behalf of his principal, he should nevertheless be possessed of the necessary knowledge, or he cannot fully protect the interests which he represents. Again, annual valuation will always be necessary upon the home farm for the purpose of the annual balance-sheet.

Valuation from outgoing to incoming tenant.

When, however, the farm passes directly from one tenant to another, the question of valuation is primarily one between the outgoing and the incoming tenant—although the outgoing tenant has a legal and direct claim upon the landlord if he desires to claim it—and in that case the land agent may have no special concern with it, but will only have to see that the outgoer has so far performed his covenants that there will be no difficulty at the outset in enforcing the performance of the like covenants from the new tenant: (see the remarks on dilapidations at the end of this section.)

With regard to the ordinary valuation of those acts of husbandry or those substances which it is customary for the incoming tenant or landlord, to pay for, as representing the outlay incurred by the outgoer from which he cannot reap the benefit; it is to be observed that there are certain fixed principles of valuation generally understood and admitted, but that the exact limit to which the principle of compensation is to be carried in any particular case is a matter on which it is difficult to lay down decided and absolute rules. In the first place, the outgoer has to look to his lease or agreement, which does in many cases, and should in every case, lay down the limit. But in the next place, if the outgoer's right to compensation has not been thus settled by agreement between himself and his landlord, he has still the custom of the country to rely upon, and the Agricultural Holdings Act, 1883, already alluded to, and hereafter fully explained. The custom of compensation varies greatly in different districts, but when the outgoer has ascertained it definitely, and is able to prove its existence, he is legally as safe as though he had an agreement on the subject. (See p. 48.) Local valuers are the most reliable authorities where nice points of valuation are to be decided according to the mode sanctioned by the custom. But every valuer must of course be acquainted with those general principles, without which no valuation can be made at all.

Custom of country.

Valuers, their appointment and procedure.

In order to act as a valuer or appraiser, a man must be licensed to act as such. This licence can be obtained for the sum of two pounds on application to the collector of Inland Revenue residing in the district. These licences expire on the 5th day of July of each year. Anyone signing an award without such licence is liable to a penalty.

The appraisement, *i.e.*, the inventory of goods with the value attached, must be written upon stamped paper and signed by the valuer or valuers, as the case may be.

Stamp duties.

The following are the stamp duties:

	£	£	*s.*	*d.*
Not exceeding	50	0	2	6
Exceeding 50 and not exceeding	100	0	5	0
100 and not exceeding	200	0	10	0
200 and not exceeding	500	0	15	0
500 and not exceeding	1000	1	0	0

The award.

The form of valuation, or the award, is simply the bill or account from the one party to the other. When signed by the respective valuers, it is presented by the person acting for the outgoer for payment, either to the other party direct or to his valuer. When paid, a receipt is given for the money on the award, no further stamp being required. It is then held by the incoming tenant as proof of payment, a copy (which requires no stamp) being furnished to the outgoing tenant.

The valuer acting for the outgoing tenant takes the initiative in settling the values. His task, therefore, is somewhat more onerous than that of his fellow.

It is clear that no satisfactory result could be arrived at if the detailed figures adopted by valuers were made known to the respective parties. No gentleman could undertake the task of valuation if he knew that every figure he decided upon would be subjected to the cross-examination of the parties most interested. Therefore it is the practice to render to the incoming tenant a full inventory of the items under question; but as to the value, the sum total only is added. To explain this more fully, an example is given of both the fully-priced inventory and the same as it is forwarded to the respective parties. (See *post.*) It is important, however, to observe that this secrecy as to the value of items must not be carried too far. A demand for particulars, when based on *bonâ fide* principles, should be immediately complied with. Under no circumstances must this rule of the profession be made a pretext for sheltering the ignorant.

Appointment of valuers.*

The outgoing and incoming tenants each select and appoint a valuer, without it is agreed that one valuer shall act for both parties. These valuers, when they meet, select on their part a third, or "umpire." This they do in writing—*i.e.*, they make an entry in their books somewhat to this effect, viz.:

> We hereby agree, in the event of any dispute arising in the valuations upon   Farm, to submit the same to A.B., and we agree to accept his decision upon all points as final.
>
> (Signed) C.D.
> E.F.

Reference to umpire.

In the event of a dispute arising, a joint letter is written to A.B., informing him of the fact of his appointment as umpire, and requesting him to meet the parties in consultation at such and such a place, and at a specified time; or, when possible, the subject is submitted to him by post for his decision.

Umpire's fee.

He will reply to each party, and, his decision having been given, he will forward a moiety of his charges to each, holding the award until his charges are paid. This charge will vary in accordance with circumstances, but is seldom less than three guineas. It must be borne in mind, however, that these figures apply only to simple matters of agriculture and tenant-right.

Valuers' charges.

We may here mention that valuers' charges are based, as a rule, upon the amount of the award. In some counties they are paid by the day—probably about three or five guineas and expenses. When by percentage, it may range from 2½ to 5 per cent. The expense of the stamp is shared, *i.e.*, a moiety is paid by each party.

---

* The subject of *Reference* is specially dealt with in the Agricultural Holdings Act 1900, which see, *post.*

We shall confine our observations in this section to the valuation of those acts and substances which are left generally upon the farm, assuming that all live stock and implements have been removed or sold by private treaty or auction. Nevertheless, arrangements are sometimes made whereby the whole of the farmer's stock passes to the incomer by valuation. This, however, is not to be encouraged.

Valuation of tillages.

The term "tillage" represents those acts of husbandry which are essential to the cultivation of the holding, and which consist in the working of the soil—viz., ploughing, harrowing, drilling, labour on manure, and such like.

All these operations cost money, cause wear and tear of machinery, cause risk to horses, and require the farmer's skill. The value, then, of these respective acts is the cost of them reckoned upon the above basis.

Example of cost of tillage.

Take ploughing as an example.

Suppose it requires two horses to plough a certain soil, and, assuming that they will plough an acre a day, the calculation is made as follows:

	s.	*d.*
Keep and risk of a horse per day	3	6
Ditto. ditto	3	6
Ploughman's wages	2	6
Wear and tear of plough and harness	1	0
	10	6
Farmer's skill, and interest on capital, and loss of time in bad weather	1	6
The cost of ploughing one acre	12	0

There is a difference between the actual cost to the farmer of an act of tillage and the cost as allowed by valuers. Valuers' prices are invariably based on a scale above the actual cost price; (1) because such a scale became customary at a time when there was a great demand for farms; and (2) because a farmer, conducting an act of tillage which he would not reap the benefit of, was allowed a profit on his work, which the occupying farmer would reap from the crop.

Such a practice cannot now be departed from without inflicting a loss on the quitting tenant.

Tillage must be properly performed.

An important matter to bear in mind, however, is that all operations, to merit their full value, must be well performed. It would be obviously unfair to the incoming tenant, and also to the painstaking outgoing tenant, to charge the same for an acre of land, whether well or ill ploughed. So much more than is generally supposed depends upon good cultivation, that this is all-important.

Cost of various tillages.

All the acts of husbandry are reckoned in this way, and we give the following list, with the prices which we have found suitable in Hampshire. They will, of course, vary more or less in other places.

	s.	*d.*		*s.*	*d.*	
Ploughing, from	10	0	to	14	0	per acre.
Harrowing ,, ...				0	9	per tine.
Dragging ,, ...	1	3	to	1	6	,,
Drilling ,, ...	2	6	to	3	0	per acre,
Ditto, with ashes or water ...	5	6				,,
Pressing ,, ...	3	6	to	5	0	,,
Cultivating ,, ...	3	6	to	5	0	,,
Sowing broadcast, from.........	0	4	to	0	6	,,
Horse hoeing, from	1	9	to	2	6	,,
Rolling (light or heavy), from	1	0	to	2	0	or 6*d.* [per horse.
Filling, carting, and spreading dung, from	10	0	to	12	0	per acre.
Hand hoeing, from..............	4	0	to	7	0	,,

Method of procedure.

When valuing tillages, therefore, the fields are visited in rotation by the valuers, and the acts of husbandry, given by the farmer or bailiff, are entered in their respective note-books. The full value of those operations only must be allowed from which the outgoing tenant has reaped no benefit, and which are as beneficial as they should be to the incomer. For if the object of the cultivation has not been arrived at, owing to imperfect execution, it is unfair to charge it all to the incoming tenant. For example :—A fallow, thoroughly performed, has been money well expended, and no incoming tenant will grudge the amount; but if the fallow, after an apparently full tillage, has failed in its object, if the land is still foul, it is hard and unfair to charge the full amount to the incoming tenant. Some portion must be borne by the outgoing tenant, who must suffer from the incompleteness of his work; nevertheless, it is essential that this incompleteness should have arisen from work badly performed, and not from the result of seasons.

Failure of crops.

On the other hand, when the farmer has done his best to secure a crop, and the crop, through no fault of his, fails, it would be hard upon him to suffer the loss. The result of this would be to leave a large acreage uncultivated at the end of the term; as, if a farmer felt that repayment of his labour was subject to the success of the crop, he might prefer not risking it.

All the incoming tenant under the same circumstances could do would be to sow, and leave the result to Him who gives the increase. Therefore, where a root or other crop fails from no fault or neglect, the full amount expended upon it should be paid by the incoming tenant without question.

Allowance of rent, rates, and taxes.

The matters submitted to valuation will, of course, vary with the period. If the change of tenants takes place at Michaelmas the items to be considered will vary considerably from those presenting themselves at a Lady-day valuation.

Michaelmas valuation.

In a Michaelmas valuation in some counties we have to deal with rent, rates, and taxes; in others they are not allowed at all. Fallows and root crops receive at Michaelmas in some districts the full amount of these paid by the outgoer, in others the charge is not made at all.

At Lady-day, however, some allowance should be made, as will hereafter be explained.

In a Michaelmas valuation we may have to deal with growing corn, and we shall also have to consider such tillages as bear upon the root crop, the preparation of clover ley for wheat, summer fallows, and clover seeds.

Growing corn. In some instances a Michaelmas valuation will include the growing corn. When this is the case, the decision upon quantity must be arrived at in July, as it is impossible to value quantity when in stack. When, therefore, an arrangement of this kind has been entered into by the respective parties they will communicate with their valuers, who will, before harvest, together or separately, as they may deem best, walk through and inspect each field. In their note-books they will enter the name of the field, acreage, kind of corn, and their opinion as to quantity. These figures they will compare, and when they have arrived at their decision the values will be left until Michaelmas and decided in accordance with the market price at the time. Such values will be less the cost of thrashing and dressing and conveyance to market. In the case of wheat 3*s.* to 3*s.* 6*d.* per quarter may be reckoned as a fair deduction. In barley and oats 2*s.* to 2*s.* 6*d.* per quarter. Much care must be taken in valuing standing corn, and perhaps nothing tests the ability of a valuer more. He must take into consideration the straw, the quality of the grain, the ear, whether well filled or deficient, the blights to which the crop is subject, and whether the attack is likely to decrease the yield or injure the quality. To be able thoroughly to comprehend this, he must have, if not a scientific, at least a practical knowledge of blights, for the wheat crop is subject to at least four or five enemies in the form of blight, to a greater or less extent every year. This subject will, however, be spoken of hereafter.

Method of valuing growing corn.

Root crop. Sometimes root crops are valued by the value of the crop per acre; but it is more often reckoned at the cost of the cultivation. When the former method is resorted to, the outgoing tenant, if the crop is a heavy one, will reap a decided advantage; when, however, the crop is light or a partial or full failure, the result to him would be disastrous. If this plan is resorted to the valuer proceeds to arrive at the quantity per acre, and to reckon the same at its feeding value. A proportionate part of an acre is measured off in a portion of the field where the crop represents a fair average (a square rod, *i.e.*, 5½ yards square, is a useful size), and may be laid off without difficulty by doubling a surveying chain, and drawing it tight as a square, and laying it carefully on the ground. The crop inclosed, which will be exactly one square rod in extent, may be then weighed, and, multiplied by the acreage of the field, gives a fair idea of the total quantity. The feeding value of roots may be stated to be at the present time as follows:

Feeding value of roots.

Mangold, from	.... 7*s.* 6*d.* to 10*s.*	per ton.
Swedes ,,	.... 7*s.* 6*d.* to 10*s.*	,,
Turnips ,,	.... 6*s.* 6*d.* to 7*s.*	,,

according to the time of year. The feeding value in summer would exceed that of the winter after harvesting.

Method of valuing a root crop.

The fairest way, however, of valuing a root crop is to take the sum it has cost to produce. This sum includes, perhaps, three or four ploughings (unnecessary on clean land), repeated draggings and harrowings, drilling, seed, and manure, application (occasionally) of dung, hoeing, &c.; in some districts even the rent and taxes are included. The cost, therefore, under any circumstance is heavy, ranging often from 4*l.* to 6*l.* per acre.

Preparation for wheat. Fallows.

Preparation for wheat may be by summer fallow, and on heavy clay lands such is usually the case. The cost is very heavy, especially when a year's rent and taxes are allowed, as is the case in some parts of Sussex and Surrey. It is not an unusual thing for a fallow to cost under the latter circumstances 7*l.* or 8*l.* per acre. Four or even five ploughings, with their accompanying dressings, may be allowed, but valuers will not allow more than this; the land ought not to require it.

It is unnecessary to describe a fallow, it has been so often done, and the reader can refer to many good authors upon the subject. It is necessary, however, to state that, except upon heavy clay lands (where the practice is absolutely necessary to secure a heavy crop of wheat), it is not only a proof of the foul state of the farm, but is absolutely ruinous; and as it ought not to be necessary, great care must be taken by the valuer for the incoming tenant to protect his client against any such claim. The incomer should only pay for as much of the operation as would have been necessary were the farm clean and in good condition.

To obtain the full value of a "fallow" no crop of any description must have been taken off the land since the previous harvest, *i.e.*, the land must have rested for one year.

Clover leys.

In the preparation of clover leys for wheat, we shall have, at this early period, little but the labour on the dung, ploughing, and pressing.

The valuer here will have to exercise great judgment as to the quality of the ploughing; a good furrow alone will secure the necessary firm bed, and the "tread" so much desired, for a successful crop of wheat depends almost entirely upon this operation.

Clover and grass seeds.

Clover and grass seeds are the seeds sown with the spring grain crop, and intended for the following year's hay crop.

The value is the cost of sowing and of the seeds. If the seed bills can be obtained, they are generally entered in the valuation as they are, in full; if not, a sum supposed to represent the value may be taken—about 11*s.* per acre is a fair amount for an ordinary mixture of grass and clover seeds.

Failure of clover.

This, like the root crop, will sometimes fail. When this is the case, the amount must be paid by the incomer, unless the failure can be proved to be due to carelessness or neglect, or to the too frequent sowing on the same land.

Sainfoin.*

Sainfoin roots will be mentioned when we treat of a Lady-day valuation. Special acts of husbandry we need scarcely mention, they are all based upon the same principles, viz., giving to the outgoing tenant a return of his money judiciously expended.

Straw and hay.

Straw and hay are reckoned at either market or feeding value, as may have been agreed upon, or in accordance with the custom of the country. The usual method of valuing straw is by the acre, not by the ton or load, as is the case with hay. *The feeding value* is generally 8*s.* or 10*s.* per acre.

Feeding value of straw.

Market value of straw.

The *market value* is about 30*s.* or 40*s.* per acre, according to the market and the nature of the soil on which the straw has been grown, some lands being capable of growing very heavy crops of straw, whilst others will carry but little.

When straw, however, is in stack, and the acreage unknown, it must either be measured or trussed out; about eighteen to twenty yards may be taken to represent a ton; and 36 trusses, weighing 36lb. each, will equal 1 load.

Straw is sometimes left upon the farm free of charge, the incoming tenant taking it away from the machine at his own expense; but this custom varies much, and the matter should, as already stated, be provided for by the lease. If no charge is made, the outgoing tenant has no interest in it; he is consequently careless about it, and much loss is the result. Custom, where no payment is allowed, will usually permit an outgoing tenant to fodder-out his own straw if he so desires.

Feeding and market value of hay.

Hay is also valued at either market or feeding price. The difference between the two is generally about 20*s.* per ton. The method of measurement and computation of weight is given (see *post*).

---

* By referring to Part III., Schedule I., of the Agricultural Holdings Act, 1900, it will be seen that sainfoin is now an improvement for which compensation may be claimed. See *post.*

With regard to straw and hay, and also with regard to dung, the right of the outgoing tenant to compensation, or the manner of computing it, seems, when it is left to custom, to vary so much in different counties that it is preferable in this (as in other matters) not to rely upon the custom, but to have the understanding of the parties expressed in the lease. It may, however, be remarked that when fodder price is given for straw, dung is left free of charge on the holding; but when market price is given, the dung is valued; that is, of course, if there is no agreement to the contrary.

Farmyard dung.

Farmyard dung when straw is left at feeding value is usually left free of charge upon the farm, the outgoing tenant receiving only the amount of labour he has expended upon it.

Value of farmyard dung.

In some counties, however, the dung itself is paid for. The value of such dung will be assessed upon the sum ruling in the district; but as the cake and corn which has been consumed is valued under the provisions of the Agricultural Holdings Acts, its enhanced value through this will not be taken into account.

Weight of farmyard dung.

It is necessary, when dung has to be valued, to get it into heaps, so that the quantity may be arrived at by measurement.

A cubic yard of dung will weigh about 15cwt., equal to a small cart-load; a large cart will hold nearly one and a half yards. The value will range from 3*s*. to 5*s*. per load.

Cost of labour on farmyard dung.

When labour alone is considered, the amount for filling, carting, and spreading is reckoned at 1*s*. per load, or 10*s*. to 12*s*. per acre.

When in mixens or heaps, at 9*d*. per yard, or a little more when the distance of cartage is considerable.

The heap or mixen should be well made to prevent loss by exposure to rain. When carelessly conducted, but a small allowance should be made. Reference is made to the chapter upon "The Home Farm" for further remarks upon this important subject.

Folding.

A claim for folding is sometimes made, and will deserve consideration. The valuers, however, must satisfy themselves that the folding has been properly conducted; that is, that the sheep have been kept within a fold over the whole field, and at the rate of five lambs or three sheep to the square hurdle. No claim can be made or supported where they have been allowed to range at will. The substance of the claim, of course, is for the benefit which will attach to the ensuing wheat crop from the droppings and tread of the sheep. If the folding has been thorough and complete, from 20*s*. to 30*s*. per acre may be given.

The above form the principal features of a Michaelmas valuation. We will now proceed to discuss the like points as they present themselves to us in a valuation at Lady-day.

Lady-day valuations.

The acts of husbandry and other matters which we must note on a valuation at Lady-day differ somewhat from those to be dealt with at Michaelmas. For we enter the farm in the middle of the farmer's year, whilst Michaelmas, of course, represents the close of his year in a financial point of view. We find, therefore, his wheat and oat crop sown, his root crops nearly fed off, and much of his land either sown or prepared for sowing with barley. Therefore, whilst the principle of the valuation remains the same, the result will be different.

The customs concerning entry at this period, as well as all others, differ greatly in nearly every district; we do not profess to enumerate them. The desirable object to attain is to do away with the necessity for joint occupation. The practice of entering months before to prepare for the wheat crop, or in February to prepare for sowing Lent corn, or the practice of sharing the crop, *i.e.*, the incomer reaping and harvesting the whole, and having the right to a portion as repayment, are all objectionable. We have known compensation so successfully managed as for a tenant to enter at Lady-day, and not even to come in contact with the outgoing tenant at all.

It must, however, be borne in mind that to interfere with customs rashly, or without good reason, is not only unwise but prejudicial to true agricultural interests. Customs have arisen through certain practices being found advantageous in certain localities, and to ignore or trifle with them is to question their value.

It should, too, bestated that custom is impliedly incorporated in every lease, and will operate if not expressly excluded.

Half-tillages. The matter which will principally require our consideration is that of half-tillage. When the roots were fed off the land, the sheep carried to market only a portion, the rest they returned to the soil in the shape of dressing. The outgoing tenant naturally claims this dressing. He says, "If you do not allow me something for this, I ought to reap my own crops and take from them what you refuse to give me." His demand is a just one.

Joint occupation, however, for so long a time would be undesirable. Therefore, either custom or the agreement of the parties usually provides some arrangement to obviate this. Half the cost of the cultivation of the root crop is given to the outgoer. Hence the term "half-tillage" is given to it. This is, however, not very fair. The sheep have not left one-half of the crop behind them. In our practice in this matter we have not followed the usual course, but have endeavoured, whilst giving a fair compensation to the outgoing tenant, to secure to the incomer a fair dressing for a fair price. In agreements, therefore, for Lady-day we allow "*compensation for roots fed off,*" but limit the amount —25*s.*—30*s.* If the root crop has been a heavy one, the full amount may be given; if it has been a light one, 15*s.* to 20*s.* may be quite sufficient. The plan has, however, this disadvantage, that when land has been ploughed and sown, it is difficult to know whether a heavy or light crop has been consumed off it, and we have only the tenant's word to guide us. But even with this disadvantage it is fairer, in our opinion, than subjecting an incoming tenant to a payment for a heavy dressing which he has not obtained; or, if "one-third tillage" instead of "half-tillage" were resorted to, the case might be still more fairly met.

Wheat crop. The tillages of the wheat crop will, of course, be paid in full, and will consist of ploughing and pressing after the spreading of manure, dragging and harrowing, drilling and seed, and other acts of tillage that may have been deemed necessary—as already mentioned in a Michaelmas entry.

In the event of the wheat crop being sown upon a fallow, the valuation would extend to the whole of that operation.

Seeds. Many farmers are tempted to feed young seeds early in spring, especially when they are quitting the farm. Shepherds are particularly inclined to this when they can get the opportunity. It ought, however, to be strictly discouraged, and we have in our Lady-day leases provided for this by disallowing compensation in every case when it is resorted to.

If the seeds are a full plant and have not been fed off, the valuation will consist of seed and labour. Allowance for rent, &c., is a matter of custom or agreement, and may be left to the discretion of the valuers. It will depend chiefly upon the terms adopted when the outgoing tenant entered upon the holding, as he will be entitled to claim compensation on precisely the same basis, if he has not contracted himself out of his privileges.

If the plant has failed or partly failed the compensation should be withheld, or only a portion paid—for this reason, that a clover crop ought not to fail when the farm is properly managed. If by a repetition of broad clover at too short intervals "clover sickness" results, the incoming tenant should not be called upon to bear the loss.

Sainfoin roots. Sainfoin roots may be met with at Michaelmas or Lady-day. If the crop has been sown the previous season, and has not been fed off since harvest, the outgoing tenant may claim at Lady-day the full cost of such cultivation, and, under some circumstances, one-half rent and taxes—20*s.* to 30*s.* for the second, 15*s.* to 20*s.* for the third.

Compensation for sainfoin roots.

Laying down land to sainfoin is an expensive operation when well performed, but upon limestone soils it is such a valuable crop that full compensation should not be withheld. The custom of the sainfoin districts provides compensation for three years, but no more, no matter how good the crop may be.*

A farmer entering on a farm and paying the outgoing tenant compensation according to the custom of the country, has the satisfaction of knowing that at the end of his term he will by the custom have a similar right to compensation from his successor. Where the custom is departed from, and the outgoer is compensated according to some special terms contained in his lease, the incomer may be content to deal with him on the footing of those terms, provided the same terms are inserted in the new lease so as to give him the like rights against his successor.

We have already stated that custom and opinion differ to such an extent that it is difficult to lay down absolute rules upon the subject of valuation to meet all cases. Sufficient has perhaps been said to enable the young land-agent or pupil to understand the general principles upon which the operation of valuing depends. He must to a great extent work out in his own mind the actual bearings of all cases as they present themselves to him. Common sense will guide him when set rules would often confound. He must bear in mind that compensation should be given cheerfully for all acts that visibly affect the value of the land, and for which the operator has received no benefit, and should be withheld for all acts injudicially and extravagantly carried out; but that compensation (unless in such special matters as we have noticed) should always be within the value of the benefit.

---

* In Part III. of the Agricultural Holdings Act 1900, Improvement No. 26, sainfoin ranks for compensation.

Extinguishment of objectionable rights.

We would here remark what an excellent investment of landlords' capital presents itself in some districts in the purchasing of objectionable "tenants' rights" and merging them in the soil. An extra rent might safely be charged if, by the extinguishment of old-fashioned rights, the tenant's capital, instead of being applied on entry in purchasing them, could be retained for immediate use upon the farm.

Survey of dilapidations.

It may be useful here to notice a point which should always, on the determination of a tenancy, engage the attention of an agent. It should never leave the state of repair of the property, or, in other words, the dilapidation which it may have suffered, as a matter to be settled between the outgoing and the incoming tenant. Unless the agent is absolutely satisfied on the point, the best course is for the landlord and tenant to join at the end of the term in appointing a competent surveyor to draw up a schedule of the repairs which, according to the term of the tenant's covenant, he may be bound to execute, and to affix to the schedule an estimate of cost, the document being stamped with an appraisement stamp. This being done the sum declared in the surveyor's award should be paid by the tenant to the landlord. The carrying out of the repairs should be left to the landlord and never performed by the quitting tenant.

Fixtures.

It will also be the agent's duty in every case to see that the outgoing tenant does not attempt to remove any fixtures which by being affixed to the soil have become the property of the landlord. But on these points we may refer to the Supplement (*post*).*

*** Special attention should be paid to the subject of Fixtures as affected by the Agricultural Holdings Acts 1883 and 1900. (See *post*.)**

SECTION II.

RULES FOR ASCERTAINING WEIGHTS OF HAY AND CATTLE AND CONTENTS OF ASH HEAPS.

TO ASCERTAIN THE WEIGHT OF HAY BY MEASUREMENT.

CHAP. II. Sect. 2. *Rules for ascertaining Weights and Measurements.*

Weight of hay by measurement.

THE weight of hay will, of course, much depend upon the nature of the herbage from which it was taken; also upon the state of it when carried.

Well-heated hay sits closely, but late cut hay, when exposed to rain and carried dry heats but little and consequently settles lightly.

The difference between the two leaves room for, and requires, judgment.

Rule.

The rule is, to measure the length and breadth and height, multiplying the same together and dividing the product in yards by the number of yards, which under the circumstances may be considered to be equal to a ton of hay. This number may vary from nine to twelve—ten cubic yards of well-made old hay being equal to a ton, whilst it may take twelve yards of inferior or second cut hay to weigh that amount. Occasionally prime clover hay will settle so closely as to yield a ton to nine cubic yards.

In practice it is usual to measure the height only a little above the eaves; if the full measurement of the roof is taken the sum arrived at will be greatly in excess of the real quantity; the top of the stack is not only light from want of pressure, but is often of inferior quality. The best of it may be used for making up the trusses, the inferior tied up as outside and sold at a low price.

Method of arriving at contents.

The density of the stack may be arrived at by thrusting in the hand, or by forcing in a sharp stick or rod, or by cutting out a piece with the hay-knife. The latter practice is often resorted to when the quantity is large, and in the event of any dispute between valuers. A cut is made from

Chap. II. Sect. 2. *Rules for ascertaining Weights and Measurements.*

the top, about the middle of the stack, to the bottom, and about two trusses in depth; this gives a fair insight into the quality of the rick, and if the same be weighed and the cavity measured, a very exact computation may be arrived at as to weight. A better plan still is to use a sampler, which may be thrust at will anywhere into the stack. By this means the quality throughout can be accurately determined.

If the contents be taken in feet, we may reckon a foot to weigh from 6lb. to 9lb., according to solidity.

Examples.

Example:

Suppose a stack of well-heated and old meadow hay measures 33ft. in length, 17ft. in width, and 9½ft. in height, what is the tonnage?

33 × 17 × 9½ = 5329½ cubic feet.
5329½ × 8 (weight per foot) = 42636lb.
42636 ÷ 2240 (lb. in 1 ton) = 19 tons.

Or,

5329½ cubic feet ÷ 27 (cubic feet in 1 yard) =198 yards (nearly).
198 yards ÷ by 10 = 19·8 tons.

Again—

A hay stack measures 33ft. in length, 17ft. in width, and 9½ft. in height. Quality, dry and light. Required, the tonnage.

33 × 17 × 9½ = 5329½ cubic feet.
5329½ ÷ 27 = 198 cubic yards.
198 ÷ 12 = 16½ tons.

Second-cut clover hay will require a still larger divisor say, 12 to 13.

Hay should not be measured, when great accuracy is required, before Michaelmas.

To Ascertain the Weight of Cattle by Measurement.*

To arrive at this there are various rules. It is, however, necessary for accuracy that the measurer should have a

---

* By an Act of Parliament weighing machines must now be provided at all markets, so that those desirous of selling or buying by weight may be able to do so. When this is done it is necessary to reduce the live weight (the result of the scales) to the dead weight. This can only be correctly done by those who are able to judge by appearance and touch, so that the remarks in the text are still applicable. Small farmers who have no scales, and others who sell at home, may still resort to measurement, as it is reliable and trustworthy if correctly performed.

Chap. II. Sect. 2. *Rules for ascertaining Weights and Measurements.*

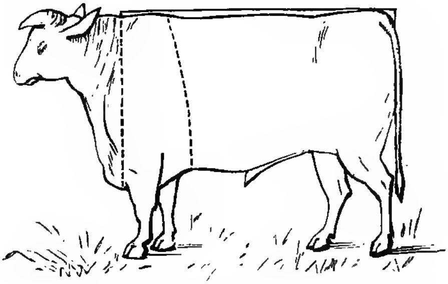
considerable knowledge of the points of a fat beast, and also be cognisant of the facts connected with the feeding, the length of time in stall, and the nature of the food. When these points are thoroughly understood and considered, it is astonishing how very accurate the calculation becomes.

We have measured cattle of shorthorn, Devon, and Highland breeds, and, comparing the result of the calculations with the actual weight afterwards arrived at by the butcher, have found it often within 4lb. of the actual weight. The rule we have found most reliable is the following, but one, nevertheless, needing more than any other the above qualifications.

Method of measurement.

Take the girth immediately behind the shoulder, drawing the tape fairly tight, then take the length from the shoulder to the *tail-head,* each place being determined by an imaginary perpendicular line, let fall and clearing the fore and hind quarters respectively. Thus—

MEASURING CATTLE.



Rule.

Next proceed with your calculations as follows :—Square the girth in feet, and multiply the result by the length, and the product again by a decimal selected from the following table, striking off to the right as many points as are contained in the decimal, and the result will represent the carcase weight of the beast in imperial stones.

Chap. II.
Sect. 2.
Rules for ascertaining Weights and Measurements.

Table of Decimals applicable to Beasts of various Classes.

A moderately fat beast	·23
A fat beast	·24-·25
A prime fat beast	·26
A very fat beast	·27

To reduce imperial stones to Smithfield stones of 8lb., multiply by 7 and divide by 4. To reduce imperial stones to the score of 20lb., multiply by 7 and divide by 10. To reduce imperial stones to a cwt. of 112lb., divide by 8. The process may be reversed by multiplying by the second figure, and dividing by the first.

Another rule is to multiply the square of the girth in inches by the length in inches, and divide the product by 7238, and the quotient will be the carcase weight in imperial stones.

Another rule is to multiply the square of the girth in feet by five times the length in feet, and divide by 21, and we have the same result.

Examples:

A fat ox measures 7ft. 4in. in girth, and 4ft. 6in. in length. Required, the weight.

Rule I.

$7\tfrac{1}{3}^{2} = 53{\cdot}73 \times 4{\cdot}5 = 241{\cdot}785$

$241{\cdot}785 \times {\cdot}24 = 58$ imperial stones.

Rule II.

(Girth in inches) $88^{2} \times 54$ (length in inches) $= 418176$.

$418176 \div 7228 = 57{\cdot}7$, or 58 imperial stones (nearly).

Rule III.

Girth, in $\text{feet}^{2} \times 5$ lengths, in feet $\div 21$

$53{\cdot}77 \times 22{\cdot}5 = 1209{\cdot}825$.

$1209{\cdot}825 \div 21 = 57{\cdot}6$ imperial stones.

One-tenth to one-twentieth of the weight may be added in rules 2 and 3, when the beasts are prime or very fat, to correspond with the decimals by rule 1.

CHAP. II. Sect. 2. *Rules for ascertaining Weights and Measurements.*

TO ASCERTAIN CONTENTS OF ASH AND SAND HEAPS.

Ash and sand heaps for measurements should be in the form of cones. It is often necessary to calculate the contents of such. The contents are generally considered in cubic yards or bushels. In the case of ashes, the labour of burning is mostly performed by the bushel;* in the case of sand, it is generally sold or bought by the yard.

The rule to find the contents of a cone is, to multiply the area of the base by the height, and divide by 3, or by formula :—

$$\frac{\text{Area of base} \times \text{height}}{3} = \text{solid contents.}$$

Therefore to find the contents of a heap of ashes, proceed as follows :—

Take the diameter of the base and the height, and proceed according to the foregoing rule.

Example :

A heap of ashes or sand measures 12ft. in diameter and 8ft. in height. Required, the contents in cubic yards.

(By rule of circles, *post.*)

$12 \times 3{\cdot}1416 = 37{\cdot}699$ (circumference).

Then half the diameter × half the circumference.

$6 \times 18{\cdot}85 = 113$ (area of base).

Area of base × height.

$113 \times 8 = 904.$

$904 \div 3 = 301\frac{1}{3}$ cubic feet.

$301\frac{1}{3} \div 27 = 11$ cubic yards.

1 cubic yard contains about 25 bushels of ashes.

---

* The price usually given for paring, and burning ashes, is 3*s.* 6*d.* to 4*s.* per hundred bushels.

SECTION III.

Forms of Valuation.

Form of a Michaelmas Valuation in "Detail."

Chap. II. Sect. 3
Forms of Valuation.

Tillages.

A.	R.	P.		s.	d.	£	s.	d.	£	s.	d.
4	0	0	*Mangold.*	*Faithful's Green.*							
			3 ploughs	12	0	1	16	0			
			6 drags	1	3	0	7	6			
			2 rolls	1	0	0	2	0			
			Drilled	4	6	0	4	6			
			4 harrows	0	9	0	3	0			
			4lb. of seed	1	0	0	4	0			
			4cwt. mangold manure	5	0	1	0	0			
			4cwt. salt	1	3	0	5	0			
			Filling, carting, and spreading (F. C. S.) 12 loads	1	0	0	12	0			
			3 hand hoeings	4	6	0	13	6			
			2 horse hoeings	2	0	0	4	0			
						5	11	6	22	6	0
2	0	0	Same as above failed. Half dressing allowed.*						5	11	6
2	0	0	*Cabbages.*	*Faithful's Green.*							
			2 ploughs	12	0	1	4	0			
			F. C. S. 12 loads	12	0	0	12	0			
			2 drags	1	3	0	2	6			
			2 harrows	0	9	0	1	6			
			1 roll	1	0	0	1	0			
			Planting	12	0	0	12	0			
			3 hand hoeings	4	0	0	12	0			
						3	5	0	6	10	0
			15,000 cabbages	3	0				2	5	0
4	0	0	*Wheat.*	*Eighteen Acres.*							
			1 plough			0	12	0			
			Pressed			0	5	6			
			F. C. S. 12 loads			0	12	0			
						1	9	6	5	18	0
5	0	0	F. C. S. 12 loads						3	0	0
			Carried forward						45	10	6

---

* See *ante*, p. 82.

Chap. II.
Sect. 3.
Forms of Valuation.

A.	R.	P.		s.	d.	£	s.	d.	£	s.	d.
						Brought forward			45	10	6
5	0	0	*Mangold.*			*Oaklands.*					
			1 plough	12	0	0	12	0			
			6 drags	1	3	0	7	6			
			4 harrows	0	9	0	3	0			
			2 rolls	1	0	0	2	0			
			Drilled	4	6	0	4	6			
			4 cwt. turnip manure	3	6	0	14	0			
			5 cwt. salt	1	3	0	6	3			
			F. C. S. 12 loads	12	0	0	12	0			
			4lb. seed	1	0	0	4	0			
			2 horse hoes	2	0	0	4	0			
			3 hand hoes	5	0	0	15	0			
			Labour on ashes	0	3	0	0	3			
						4	4	6	21	2	6
6	0	0	*Turnips.*			*Oaklands.*					
			1 plough	12	0	0	12	0			
			1 duck foot harrow	2	6	0	2	6			
			4 drags	1	3	0	5	0			
			4 harrows	0	9	0	3	0			
			2 rolls	1	0	0	2	0			
			Drilled	4	6	0	4	6			
			3 cwt. superphosphate	3	0	0	9	0			
			3lb. seed	0	8	0	2	0			
						2	0	0	12	0	0
0	2	0	*Cabbages.*			*Oaklands.*					
			3500 plants Planting						0	15	0
9	0	0				*Forester's Pond*					
			F. C. S. manure, 12 loads			0	12	0	5	8	0
3	3	0	*Swedes.*			*Faithful's Green.*					
			5 ploughs	12	0	3	0	0			
			8 drags	1	3	0	10	0			
			6 harrows	0	9	0	4	6			
			3 rolls	1	0	0	3	0			
			Drilled	4	6	0	4	6			
			4 cwt. turnip manure	3	0	0	12	0			
			Broad cast, half manure	0	4	0	0	4			
			3lb. seed	0	5	0	1	3			
			Harrowed across drills			0	0	6			
			3 hand hoes			0	14	6			
			2 horse hoes	2	0	0	4	0			
			Labour with ashes			0	0	3			
						5	14	10	21	10	9
						Carried forward			106	6	

Chap. II.
Sect. 8.
Forms of Valuation.

A.	R.	P.		s.	d.	£	s.	d.	£	s.	d.
			Brought forward						106	6	9
7	0	0	*Swedes.*	*Faithful's Green.*							
			3 ploughs	12	0	1	16	0			
			4 harrows	0	9	0	3	0			
			3 drags	1	3	0	3	9			
			2 rolls	1	0	0	2	0			
			Drilled	4	6	0	4	6			
			3lb. seed	0	5	0	1	3			
			4 cwt. turnip manure	3	0	0	12	0			
			Half sown broad cast	0	4	0	0	4			
			1 horse hoeing	2	0	0	2	0			
			3 hand hoes			0	14	6			
						3	19	4	27	15	4
2	2	0	*Mustard.*	*Faithful's Green.*							
			1 plough	12	0	0	12	0			
			2 drags	1	3	0	2	6			
			2 harrows	0	9	0	1	6			
			1 roll	1	0	0	1	0			
			Broad cast	0	6	0	0	6			
			20lb. seed	0	2½	0	4	2			
						1	1	8	2	13	7
2	0	0	*Rape.*	*Clay Piece.*							
			2 ploughs	12	0	1	4	0			
			4 drags	1	3	0	5	0			
			3 harrows	0	9	0	2	3			
			Clod crushed	2	0	0	2	0			
			2 rolls	1	0	0	2	0			
			3 cwt. manure	3	0	0	9	0			
			4lb. seed	0	5	0	1	8			
			Broad cast	1	0	0	1	0			
						2	6	11	4	13	10
7	0	0	*Fallow.*	*Clay Piece.*							
			2 ploughs	12	0	1	4	0			
			4 drags	1	3	0	5	0			
			2 harrows	0	9	0	1	6			
			Clod crushed	2	0	0	2	0			
			Spreading lime	1	6	0	1	6			
						1	14	0	11	18	0
			150 bushels of lime at 5*d.* per bushel						3	2	6
3	0	0	*Fallow.*								
			1 plough			0	12	0	1	16	0
									158	6	0

Chap. II.
Sect. 3.
Forms of Valuation.

			£	s.	d.	£	s.	d.
Hay.	1 stack of meadow hay	3 tons	3	0	0	9	0	0
	Stump of old clover hay	6 ,,	2	10	0	15	0	0
	1 stack of new clover hay	15 ,,	3	5	0	48	15	0
	,, second clover hay	7 ,,	2	10	0	17	10	0
						90	5	0
Fixed machinery.	Turnip pulper, horse gear, chaff cutter					12	10	0
Sundries.	77 acres of straw at fodder price, 10s.					38	10	9
	Mixens by roadside					10	0	0
	Compensation for oil and cotton cake consumed					70	0	0
	Seeds, 23¼ acres, as per seed bill, or 12s. per acre					13	16	6
	Tank, 1½ tons of coal, 4 bundles of brooms, 2 new coops, 8 old coops, 80 head of poultry, 50 bavins, 3 augers, handsaw, hammer, 4 tin milk-pans, strainer, skimmer, milk-can, 2 buckets, 1 lanthorn, 2 beer stands					10	0	0

TOTAL.

Tillages	158	6	0
Hay	90	5	0
Fixed machinery	12	10	0
Straw	38	10	9
Mixens	10	0	0
Compensation for cake	70	0	0
Seeds	13	16	6
Sundries	10	0	0
	£403	8	3

THE SAME VALUATION AS PRESENTED TO THE PARTIES AFTER HAVING BEEN SETTLED BY THEIR RESPECTIVE VALUERS.

Valuation of tillages, hay, straw, and other effects, from Mr. to Mr.

September 29, 19 .

TILLAGES.

A.	R.	P.		
4	0	0	Faithful's Green.	Mangold. The tillage, labour, and seed.
2	0	0		Failed, proportion only allowed.
2	0	0	Faithful's Green.	Cabbages. The tillage, labour, and plants.

CHAP. II.
Sect. 3.
Forms of Valuation.

A.	R.	P.		
4	0	0	Eighteen acres.	Wheat. The tillage, labour, and seed.
5	0	0	Eighteen acres.	Clover-ley. Manured.
5	0	0	Oaklands.	Mangold. The tillage, labour, and seed.
6	0	0	Oaklands.	Turnips. The tillage, labour, and seed.
0	2	0	Oaklands.	Cabbages. The tillage, labour, and plants.
9	0	0	Foresters' Pond.	Clover-ley. Manured.
3	3	0	Faithful's Green.	Swedes.
7	0	0	Faithful's Green.	Swedes and turnips. The tillage, labour, and seed.
2	2	0	Faithful's Green.	Mustard. The tillage, labour, and seed.
2	0	0	Clay Piece.	Rape. The tillage, labour, and seed.
7	0	0	Clay Piece.	Fallow. The tillage, labour, and lime.
3	0	0	Barn Field.	1 plough.

1 stack of meadow hay.
,, new clover hay.
,, second clover hay.
1 stump of old clover.

FIXED MACHINERY.

Turnip pulper, horse gear, and chaff cutter.
77 0 0 Straw at fodder price.
Mixens by roadside.

23 2 0 Seed, as per bills (or per acre).
Compensation for oil and cotton cake.

SUNDRIES.

Tank, 1½ tons of coal, 4 bundles of brooms, 2 new coops, 8 old coops, 80 head of poultry, 50 bavins, 3 augers, 1 handsaw, hammer, milk-can, 4 tin milk-pans, strainer, skimmer, 2 buckets, 1 lanthorn, 2 beer stands.

Chap. II.
Sect. 3.
Forms of Valuation.

The items before mentioned are valued by us in the sum of four hundred and three pounds eight shillings and threepence.

A.B.
£403 8*s*. 3*d*. C.D.

Memo.—The sum of half the stamp is generally added to the valuation.

Form of a Lady-day Valuation as Presented to the Parties.

Inventory and valuation of tillages, hay, and straw, and compensation in lieu of "half-tillages," &c., upon Farm, from Mr. to Mr.

March 25, 19 .

A.	R.	P.	TILLAGES.	
14	0	0	Upper Berry Down.	Wheat.
			Tillages, &c.	
6	0	0	Upper Berry Down.	Swedes.
			Compensation for roots fed off (or half-tillage if so arranged).	
9	0	0	Lower Berry Down.	Fallow.
			The tillage.	
9	0	0	Lower Berry Down.	Turnips.
			Compensation for roots fed off.	
16	0	0	Windmill Field.	Turnips.
			Compensation for roots fed off.	
7	0	0	Windmill Field. The tillage.	Fallow.
12	0	0	,, ,, ,,	Seeds.
			Seeds and tillage.	
10	0	0	Windmill Field. The tillage.	Fallow.
			Hay, straw, &c.	
			1 stump of hay.	
13	0	0	Wheat and oat straw at fodder price.	
			Compensation for oil cake fed off.	

The above-mentioned items are valued by us in the sum of one hundred and fifteen pounds five shillings and twopence.

A.B.
£115 5*s*. 2*d*. C.D.

It is customary in most counties for the landlord, or incoming tenant, to enter into partial occupation some time before the expiration of the tenancy to prepare the land

Chap. II. Sect. 3. *Form of Valuation.*

for roots and wheat. When this is resorted to, the valuations will be greatly simplified, and the amount payable by the incomer will be much reduced. It is the custom in some counties for the landlord or the incomer to enter into possession of the stubbles after harvest, to plough and prepare them for the root crop or fallow; to enter in July or August into some portion of the wheat line to prepare for the wheat crop; to take possession of the dung made during the last year of the lease, with leave to enter and draw out and spread the same; and so on.

If the lease is silent on these points, custom will operate, for custom can only be excluded by express contract.

In counties where these customs are prevalent it is unwise to exclude them by covenant, as by so doing a tenant—who is himself quitting under the custom—will have his horses idle upon his hands. The exclusion of the custom, too, renders it difficult to re-let the farm, as tenants provided with large sums of ready money are not now readily found.

CHAPTER III.

FORESTRY.

SECTION I.

TIMBER AND TIMBER-LIKE TREES; THEIR HISTORY, PROPAGATION, TREATMENT, AND USES.*

THE OAK (*Quercus*); Linnæan system, *Monœcia polyandria.*

CHAP. III. Sect. 1. *Timber.*

The oak.

THE Oak (*Quercus*) has ranked, and probably always will rank, as the most valuable of our timber trees. It requires a rich, strong soil, in which it can strike down its roots, to attain to its full magnitude. On light, open soils it comes to a premature maturity, and often shows signs of early decay; this shows itself in the growth of moss and lichen, dead branches, and late development of leaf; and, when cut, heart-shake and unsoundness are generally found near the base. It delights in tolerably high situations, and thrives best in woods and plantations.

Varieties of oak.

There are many varieties, but we shall confine ourselves to three of them—namely, the two British oaks, *Quercus pedunculata* and *Q. sessiliflora,* and the *Q. cerris,* or Turkey oak.

The two former are found over the whole of Europe, and in Western Asia, and are the prevailing kinds found in our own woods.

The former may be recognised by its leaves having short foot-stalks, and by the stalks of the fruit being long; the latter by the leaves having long foot-stalks, and the fruit being attached to the stem without any stalk at all.

---

* See also Appendix. "Timber." G. D. Watney.

The Turkey oak is unlike either of the foregoing—the leaves are more deeply pinnatifid, hairy beneath, and lanceolate—the fruit has a bristly calyx, and is hemispherical.

Propagation of the oak.

The oak is propagated entirely from seed, and great care should be taken to select acorns from well developed trees, as otherwise all care and attention may end in disappointment. The acorns may be planted any time between October and March in properly prepared nursery beds; but they are best sown as soon as gathered. It is necessary, after sowing, to protect them from birds and vermin, or every seed will probably be lost. They may be dibbled in to the depth of two inches with the finger and thumb; or sown in drills nine inches apart, and four or five inches between the seeds, or spread equally over the surface of the bed, so that each seed may have about nine square inches, and covered with soil dug from the intervening space between the beds to the depth of two inches.

The oak seldom bears fruit until twenty years old; though this depends much upon soil and climate. When felled the stump shows great vitality, throwing out abundant shoots, which makes it a valuable underwood plant.

Treatment of young plants in the nursery.

The young plants, when taken from the seed bed, should be planted in lines in a carefully prepared bed. The soil must be light and well pulverised, and be rich in vegetable mould. The ground will be carefully dug with the spade, the line being used at stated distances; the soil will be rendered nearly vertical, and the young trees placed in position along the face, hand-planted, and then covered in as the digging proceeds; and so on over the whole area set apart for the purpose.

This process of transplanting may be repeated from year to year, according to the size of tree required. The root fibre will increase with each removal, so that the oftener they are removed the better.

Planting.

When ready for planting out, say when they are from one to one-and-a-half foot high, they should be planted in suitable soils—well-drained clays, or clay loams, and in holes sufficiently large and deep to take the roots without crushing. The trees should be held by a boy or girl, and as the mould is thrown in, the tree should be lifted a little to allow of the penetration of the soil among the fibres. They should not be trodden in until the whole of the soil is placed in the hole, and then only by the man with the ball of his foot.

If the young trees suffer from bite of ground game, or in any way become enfeebled, they may be cut back the following year, or even the second or third year, and allowed to throw up shoots from the stool. These may be allowed to grow until they have attained a height of two or three feet, when the best may be selected for the future stem, the remainder being cut away. This plan is recommended in all cases where the original tree does not thrive.

Trees to be planted as nurses.

The trees may be planted from ten to twelve feet apart, according to soil and site. To protect them in their early stage, nurses of larch fir, Scots pine, or other conifers should be planted with them, four feet apart. These may be removed gradually, as the growth of the young oaks may render it necessary.

Coppice.

Another plan is to plant for coppice with oak, ash, hazel, willow, &c. (see *post*), and to leave the oak for timber when the remainder are cut over. This undergrowth in future years serves as saleable underwood, keeps the stems of the oak clean, and shelters the ground from the sun, rendering the soil moist but not wet.

Natural reproduction.

Natural reproduction is principally followed in France, but too little in England. Of course it can only be followed in existing forests or woods; but properly carried out there can be no depletion. There will always be a crop following close upon that which has been reaped.

In England, as our woods are thinned, and when the final cutting takes place, the ground is left bare and unprofitable, little attention having been paid to reserves or to seeding. Where, however, this is done, a thicket will follow, which, with proper attention, will eventually become a valuable high forest. It will be clear that new areas cannot be produced in this way but must depend entirely upon artificial means. Some foresters, when planting new areas, dibble in acorns at set distances among the conifers and other trees.

Planting acorns.

Drainage.

Previous to planting it is assumed that drainage has been carried out wherever found necessary. No trees will grow in a water-logged soil, that is, where the water lies stagnant. Moisture is needed in all cases, and must be carefully secured by ample canopy, but standing water must be removed. For tree growth open drains will be required, as pipes would quickly become stopped with root-fibre, as this invariably follows running water. The subject of drainage for forest purposes has been so fully explained in our work on "Practical Forestry," that we cannot do better than refer our readers to it.*

Pruning.

Pruning must be judiciously done, as a too vigorous use of the chisel and saw is worse than no use at all. Branches low upon the stem, or unshapely, may be removed, care being taken to cut in such a way as to allow water to run off from the surface of the cut. It is best to cut the branch, if not exceeding three inches in diameter, close to the stem, as close, in fact, as can be made (see Figs. I. and II.). The new growth will very soon completely cover the wound, and no trace of the cut will be discernible in years to come when the tree is felled and sawn into planks (see Fig. III.).

It is of great importance that branches not cut off close to the stem should be shortened back to another branch, otherwise the portion left will die for want of nourishment.

---

* "Practical Forestry," published by Crosby Lockwood & Son.

Chap. III.
Sect. 1.
Timber.

If a small branch is left, the leaves will serve to encourage the flow of sap, and the limb, instead of dying, will become a means of invigorating the tree.

The effects of a broken limb or *horn* unwisely left on the tree when pruning is to cause a flaw in the timber. The portion left dies, the sap being cut off; the new wood grows round it, and gradually envelops it; but in the meantime water and *débris* fill the cavity, and a large hole is the result, affecting very often the whole trunk. This can be seen by referring to Figs. IV. and V. We have known (in cases of old oaks, otherwise very valuable) great losses and disappointment result from a neglect of these wise precautions.

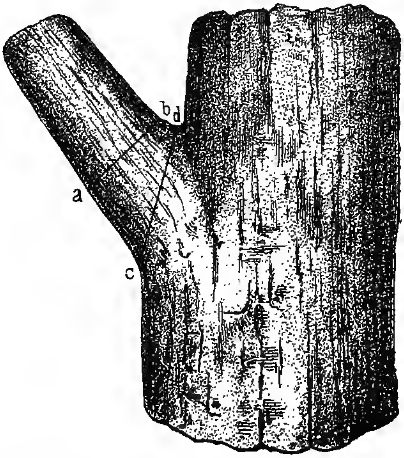


Fig. I.—Showing the correct and incorrect method of amputating a limb.

a, *b*, Incorrect. *c*, *d*, Correct.

Old trees, supposed by many to be past recovery, or too old to improve by pruning, may be re-invigorated and improved by the wise use of the saw and chisel. Young trees, from their nursery stage to, say, forty years of age, may be periodically pruned, so that the stem may be clear of branches to, at least, one-half the height of the tree,

Chap. III.
Sect. 1.
Timber.

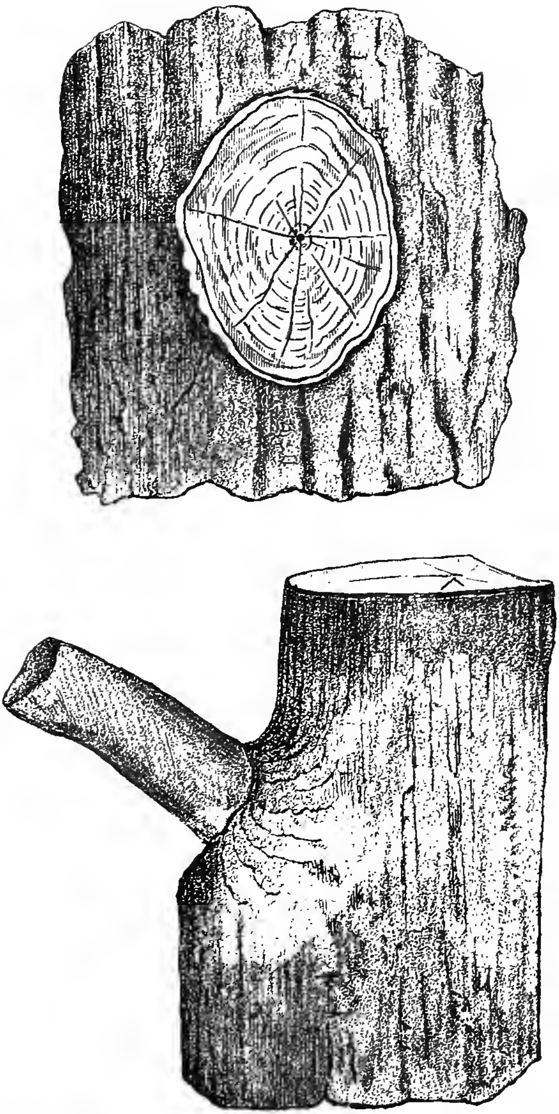


Fig. II. (1.)—Showing the cut as it should be one year after amputation.

(2.)—Effect of leaving a stump a few years after.

and the head well balanced. In the thicket stage—whether natural or artificial—the lateral branches will die off, and will not need the aid of chisel or saw.

Hide-bound trees.

Oaks in their early growth often become hide-bound; when this is the case it is a good plan to incise the bark in various places by running the scribe or a sharp knife up and down the tree. This enables the tree to expand, and probably the hide-bound condition will not return.

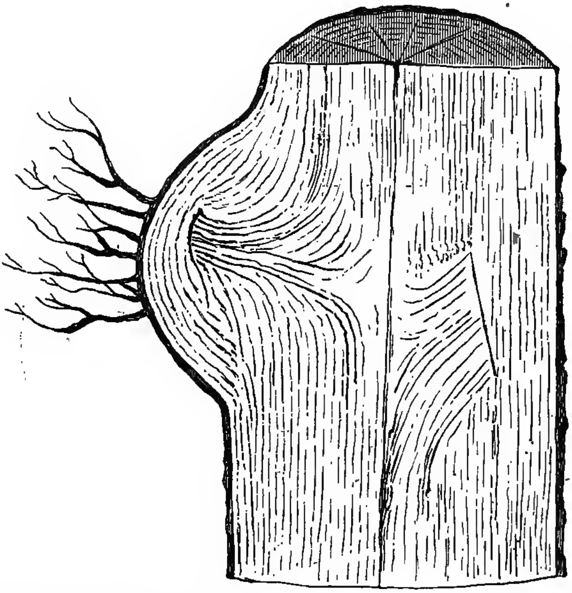


Fig. III.—The result twenty years after a correct and incorrect amputation of branches.

Uses.

The uses to which Oak is applied are too numerous to admit of full enumeration. The texture is so firm and close as to fit it for all purposes where strength and durability are required. It bears immense strain, thus fitting it for machinery of all descriptions. In fact, it is adapted to nearly all uses, from the building of our largest vessels to the most delicate piece of household furniture. Being often very straight in the grain it readily splits, and this quality fits it for laths, spokes, and palings. It is the most durable of all timber, having been found perfectly sound after doing five hundred years' service. The most durable is that grown at home, if grown on suitable soils. If grown on bare or rocky soil it will almost invariably be found shaky, and often rotten at the heart or at the base. It hardens with age, some very old oak being almost too hard to work. Oaks of large dimensions are always saleable, as they are invaluable to shipbuilders, railway waggon builders, house builders, wheelwrights, and others. Those are most valuable which grow with clean, straight, stem; but if they possess a useful bend a full price will often be given, as a natural bend is much sought after by shipbuilders and others.

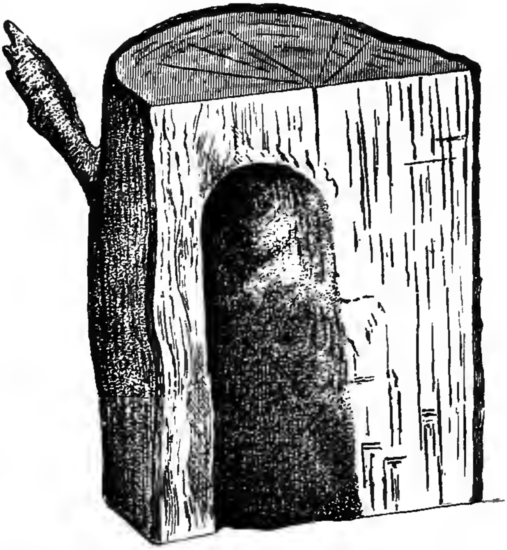


Fig. IV.—Effect of a dead stump upon the timber. This is common in old oaks. May be avoided by carefully pruning young trees.

Bark.

In addition to its qualities as a timber tree, it produces bark for tanning purposes; almost the only bark used commercially in this country. Other barks are used, viz., that of birch and larch, but only to a small extent, and in a few districts; the latter is very light, and consequently very bulky and hardly worth the cost of carriage. Owing to this value of oak bark it is necessary to fell the tree in the spring, contrary to the treatment usual in the case of other trees. The sap must commence to circulate before the bark will separate from the stem; and it is only from the

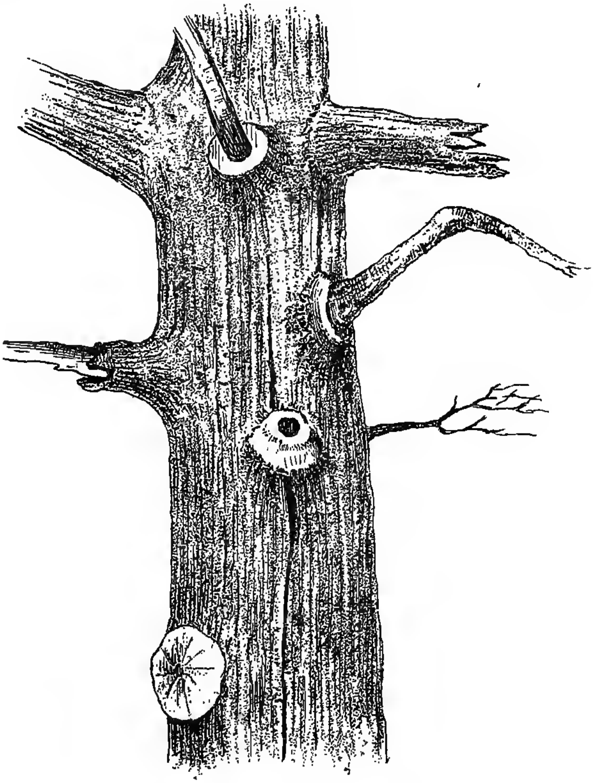


Fig. V.—Showing the effect of not pruning in good time.

commencement of the circulation to the bursting of the leaf-buds that the separation is practicable, as directly the leaf expands and performs its function, the bark again adheres closely to the trunk and branches; the barking season is therefore limited.

Season of barking. It takes place in April and May, according to the soil and climate. In localities where the soil is rich, the work is often completed before more exposed districts have commenced; thus enabling the workers to pass from one district to another. The work is usually performed by gangs of men, known as "Strippers," and is contracted for by the ton of bark. **Strippers.** The contract includes felling, stripping, and harvesting, *i.e.*, rendering it fit for stacking. The "lop and top" is left until the stripping is done, when it is made into fagots and stack-wood. **Cost of barking.** The usual sum paid for felling, stripping, and harvesting is 30*s*. to 35*s*. per ton. Tying fagots and stacking stack-wood, about 3*s*. 6*d*. per hundred for fagots, and 3*s*. to 4*s*. per stack of cord-wood.

Method of barking. Bark is taken first from the stem, in two-feet lengths; it is cut through with an axe at equal distances, and is then forced off with an iron made for the purpose. Where it will not readily separate from the tree it is beaten with a wooden mallet or the back of the axe until it starts. This trunk bark is then set aside, and barking the branches is proceeded with, down to the lesser branches an inch in thickness. When all the bark is stripped the men cut forked props from the branches about two feet long, and drive them into the ground, and upon these lay straight hazel or ash rods; against these props the bark is set up, the small branch-bark first, the best of the trunk-bark being used for covering over the top. Bark should always be set up with the inner side well protected. In some districts they erect stages by cutting forked props three feet long, laying across these pieces of small wood, and again upon these transversely other pieces or small poles, to serve as a kind of table to hold the bark.

Treatment of bark.

When dry, it should break when bent, and not bend like a green stick. If in good order the inside will be of a pale olive colour. If rain sets in it is best to leave it alone, only looking to it regularly to set up what may have fallen: by no means turn it. When fit, it is either tied in bundles with withs, carted away loose, or cut up into small pieces and placed in sacks. It is sold by the ton, and generally delivered by the seller to the nearest town at his own expense. The price of bark varies, but may be stated at 3*l.* to 3*l.* 10*s.* per ton. About one ton of bark may fairly be expected from every three or four tons of timber.

Price of bark.

Proportion of bark to timber.

In plantations of underwood, the oak is the only class of timber that should be admitted; and this only to a limited extent where the underwood is considered of value. Those with heavy and umbrageous heads should be removed.

Now that the bark is at so low a figure it is doubtful if it pays to strip the oak, and certain that it does not pay to strip larch or birch. Oak timber, if not stripped, may be felled in the winter when the timber is more valuable, and the extra price obtainable will nearly cover the net value of the bark. If no increased value attaches to winter felled timber it will be best to resort to barking.*

The Turkey Oak may be planted for the purpose of variety, foliage, or for purely ornamental effect, but as a timber tree it is not recommended. It grows best in dry, deep, and light soils; and will attain to a size equal to our own trees, but it reaches maturity early and rapidly declines when this point is reached. It is a native of the South of Europe and was introduced about 170 years ago.

The timber will not bear exposure, as we have ourselves proved, but it is suitable for indoor or cabinet work.

It will grow well on land adapted to the growth of sweet chestnut, therefore the latter is preferable.

---

* It should be noted that when in "scantling" no one can tell whether oak was felled in winter or spring.

It may be propagated from seed, cuttings, or from grafts on the stock of common oak.

Weight of Oak newly felled (in the round state), 25 to 28 cubic feet = 1 ton.

Value of Oak (according to demand), from 1*s.* 3*d.* to 2*s.* 6*d.* per cubic foot.

THE ELM (*Ulmus*) ; Linnæan system, *Pentandria digynia.*

Elm. There are many species of elm, but we shall confine ourselves to the description of but two varieties : the *Ulmus campestris,* or English elm; and the *Ulmus montana,* or wych elm.

The common English elm (*Ulmus campestris*) is not a native of this country, but there is no trace of its introduction. From the fact of its seldom seeding here, there can be little doubt of its foreign origin. It is found in the central parts of Europe and in Western Asia, and in the latter country seeds freely. **Propagation.** It is propagated in this country from layers in the following way :—An established tree about six inches in diameter is felled, and from the stool of this shoots will shortly appear ; when these have attained a season's growth they are laid over, and the base covered with four or five inches of fine mould, whereupon they take root and may be separated the following season, and planted in nursery lines ; the stool will again throw out, and may be treated in the same way the following and successive years. The elm throws out very fibrous roots, and may consequently be transplanted when of considerable size. It will also throw up suckers at a great distance from the bole, especially on light loams ; and by the preservation of these hedge-row timber is reproduced.

It grows very rapidly and comes to early maturity, and, with perhaps the exception of the oak, is one of the most common of our timber trees.

The largest specimens are found near old dwellings, churches, and monastic buildings, but the most useful are generally found in hedgerows. The trees attain considerable height, and possess large, well-developed boles, free from lateral branches, furnishing thereby excellent planks.

The branches are very brittle, and large ones should not be allowed to overhang public paths and buildings, as these often fall without any apparent reason, and sad accidents have thus arisen. This is owing to the fact that the fibre is deficient in longitudinal adhesion, although particularly strong laterally.

Uses.

The timber is durable and not likely to crack, making it useful for purposes where lateral strength is required. It is much used by wheelwrights for wheel-boxes, sides of carts, waggons and wheel-barrows. It is also used by undertakers, being one of the most valuable timbers for coffins, and by shipwrights for blocks and portions of rigging furniture. It is also used for pumps.

Price.

The price may be stated at 6*d.* to 1*s.* per cubic foot, according to size and quality. It is covered with a thick bark, the thickest in fact of any tree in this country. In measuring, therefore, an allowance must be made, which, however, will be hereafter explained. The allowance will be from 1in. to 1½in. for every foot of quarter girth.

As an ornamental tree it ranks high, being dense and massive in foliage and of tall upright growth. It attains size only in rich soil; it is therefore an excellent guide when valuing land for fixing rent.

Often unsound.

It is not uncommon to find this tree hollow, notwithstanding an external show of solidity. When old, care must be taken, when selling or buying, before felling to ascertain whether the tree is sound or not. There may be every sign of life, because a few inches of external sound wood permits of the flow and return of sap, and a tree deprived entirely of its centre may live for many years. To come to perfection it requires a deep rich loam. On dry soils, or heavy soils undrained, the tree will show signs of decay after the lapse of some years. Decay usually

Soil.

manifests itself by the dying off of the top branches. The only way to deal with this is to cut back the branches, and even the top of the tree altogether, when the decay is very marked. We do not recommend the planting of this tree except for ornament on suitable soil, or to maintain the features of an old ancestral abode. Where it is grown in hedgerows it will usually reproduce itself by suckers.

Wych elm.

The Wych Elm (*Ulmus montana*) is a native of Britain, and, unlike the common elm, yields no suckers, but seeds freely. It is propagated entirely from seed. It blossoms very freely in April, before the full expansion of leaf; and the seed ripens in June. They should be collected and sown immediately in a rich seed-bed, a light loam being the best soil for the purpose. The beds should be four feet wide, and one bushel of seed will sow a very large area. They should be covered with half an inch of mould. The young plants appear very soon after sowing, and if the weather is hot and dry it will be necessary to shade and water the beds. If not too close the young plants may be allowed to remain two years in the seed-beds, when they should be transplanted into nursery lines, about one foot apart and two feet between the lines, and allowed to remain there for two years, when they will be ready for planting out. The wych elm thrives best on open subsoils. It never attains the size of a well-developed common elm, but becomes at an early age a very useful tree. It is used much by agriculturists for farm purposes, being tough and elastic; and sells for 1*s.* to 1*s.* 2*d.* per foot. When well veined, as it often is, it is much prized for veneering, and sells at a high figure.

Propagation.

Price.

Pruning.

It should not be pruned until it reaches ten or twelve years of age, the leaders may then be shortened and some of the strongest laterals cut back. The wych elm differs in appearance considerably from the common variety. The branches are more drooping, the leaves larger, and are placed upon the twigs with great regularity, alternately on each side. It is also of a pure character, showing very little tendency to degenerate.

Weight of Common Elm (in the round state), 28 to 30 cubic feet = 1 ton.

THE ASH (*Fraxinus*); Linnæan system, *Polygamia diœcia.*

Ash.

It is only necessary to allude to the common ash (*Fraxinus excelsior*), which as a timber tree stands second to none for usefulness and beauty, and for agricultural purposes it rivals all. It is a native of this country, and is propagated from seed; these are ripe in October, when they may be collected; care, however, should be taken to select them from well-grown and healthy trees. When gathered, they should be placed in pits and mixed with double their amount of sand, and be turned repeatedly for the first few months. Here they may remain for six or twelve months. The latter time is best, as, if sown in the autumn, the young plants are apt to become injured by frosts. The seed-beds should be four feet wide, and the soil a light sandy loam. They should be sown tolerably thick and covered with half an inch of mould. They may remain, if not too close, for two years in the seed-bed, and then be transplanted in lines 6in. apart and 18in. between the lines. Whilst in lines they must be kept from weeds and grass. After the expiration of four years, dating from the time of sowing, they will be ready for planting out permanently.

Propagation.

Treatment of young plants.

Soil.

To secure decided success, it is advisable, when practicable, to trench the soil, as this tree rejoices in a free growth. The soil best adapted to it is a rich loam. When the growth is slow the timber is of little value, being brittle and loose in texture. Where, however, the growth is rapid, it is tough and elastic. Great care is required in selecting sites for ash plantations. If chosen upon high and exposed situations, whether for timber or coppice, the end may be failure and disappointment. If chosen in rich and sheltered situations, perhaps no tree gives greater satisfaction. The soil may be moist, but if it contains stagnant water, the tree soon fails. Draining, therefore, is highly necessary.

Drainage necessary.

Nurses.

It is better in every way to plant ash by itself, or at least with nurses only, with the ultimate view of removing the latter. It is peculiar in its light and airy foliage, and becomes smothered when in company with heavy-headed timber. The best nurse, perhaps, for this purpose is the Scotch pine, as it shelters without shading. As an underwood or coppice plant it will be hereafter noticed; but when planted for timber the distances may be twelve feet. A timber plantation may be formed from an ash plantation of underwood by leaving standards at correct distances. It should be borne in mind that air and light alone give leaf, and the plant without leaf is like an animal without lungs. Therefore, do not shade, for the ash is a lover of light, but protect from cold winds and frosts.

Felling.

The ash should be felled during the first three months of the year. If felled after the sap is active, the boards, when sawn, will split, and decay will set in early. For all high-class work, that which has grown rapidly should be employed, and only when it has attained maturity. When young, the sap wood is very thick, which may be seen by cutting a stick across. It is out of all proportion to the heart wood, but as age advances the latter increases.

Uses.

The uses to which it is applied as timber are too numerous to detail fully. It is used by agricultural implement makers more than any other tree, as it is better able to stand constant strain, being very elastic and pliable. Wheelwrights use it for spokes of wheels, shafts, sides of carts, and waggons, ploughs, harrows, and drags; handles of forks, spades, shovels, and picks. It is in its most useful state when comparatively young and when its growth has been rapid.

The carriage-builder uses it for his finer class of work; the shipwright for oars and paddles; the cooper for hoops;

the cabinet maker for furniture. In fact, as already stated, it is unsurpassed. In measuring the ash, allowance must be made for bark, as in oak and elm; but it will vary, of course, in accordance with the situation upon which it has grown, and its age.

Weight of Ash, 30 to 34 cubic feet (in the round state) = 1 ton.

Value of Ash (according to demand) from 1*s*. 6*d*. to 2*s*. per cubic foot.

The trees already discussed—namely, the oak, the elm, and the ash—appear to be the only trees which at all times and everywhere in this country have been considered as timber trees. But amongst those which we are about to enumerate will be found other

Trees of Scarcely Less Importance at the Present Time for the Purposes of Timber.

The Common Beech (*Fagus*); Linnæan system, *Monœcia polyandria.*

Beech.

Fagus sylvatica, is by some considered the most stately of our timber trees, and certainly, when seen in its full and perfect growth, it forms a most pleasing feature of the landscape. It is a native of this country. By nature it is very umbrageous, but by close planting it may be made to produce long stems of timber free from branches for a height of fifty feet or more from the ground.

Soil.

It grows freely on sandy calcareous loams, and often on apparently barren soil reaches both size and grandeur. In Hampshire, Buckinghamshire, and Gloucestershire many magnificent specimens may be seen—perhaps more than in other counties. A tree of great age and size, which is unsurpassed for beauty by any we have seen, grows upon a poor soil, suitable only for purposes of plantations. Its girth four feet from the ground is 26½ feet, and the diameter of the ground it covers is 68 feet. The branches are not only wide-spreading, but most eccentric in form and entanglement. In the immediate vicinity there are many others partaking of the same characteristics, but unequal in size and beauty. Another remarkable tree is situated in a beech wood near the town of Alton, in Hampshire, and known in the neighbourhood as the "King Beech." It is perfectly straight and symmetrical, and branchless to a height of seventy feet. Standing immediately beneath it and looking up, it appears like a vast column. The contents by quarter girth we have calculated at 400 feet.

As a park tree the beech is perhaps unsurpassed for beauty and shelter. As a timber tree it is valuable only when grown closely in woods. When grown in the open it yields little but firewood. In the former case it not only attains a great size, but the grain is very fine, resembling satinwood in many of its features; and then it commands a high figure.

Pruning. The saw and pruning-knife should be avoided as much as possible, as even when the greatest care is taken decay is likely to set in at the wound. When absolutely necessary, the operation should take place in spring, when the alburnum will quickly cover the edge of the cut. The surface should be chiselled smooth. This applies to all the soft-wooded deciduous trees.

Felling. The beech should be felled in the winter; otherwise early decay is likely to set in. It should, too, be removed as early as possible from the wood after being sawn out, as it soon stains if exposed, and, its whiteness being an important feature, this should not be neglected. The planks should be nailed across soon after sawing, to prevent splitting; and, when stacked, air should be allowed to circulate freely through.

Uses. The uses to which it is applied are very numerous, one of the principal being chair-making. It is also used for cheap furniture, being often stained to represent mahogany, and passes as such. It is used by wheelwrights for felloes and rollers; by builders for weather-boards, and for many other purposes where great durability is not required. It

I 2

is a favourite wood with turners, being short in grain and capable of taking a fine surface. When sawn across the quarter it presents a pretty grain, but not in so marked a degree as the oak.

Propagation. It is propagated from seeds; these are found as nuts in prickly husks called "mast." They are ripe in October, and may be collected by beating the tree and allowing the nuts to fall into a sheet. A great many so collected will be of little or no value; they may be separated after gathering by throwing all the mast into a vessel of water, when the empty or partially developed ones will float, and may be skimmed off. The good ones when dry should be placed in sacks or barrels with about double the amount of sand, and kept so until April. If planted in the autumn the young plants, being peculiarly susceptible, are often carried off by severe frosts. In April these seeds may be planted in well-prepared beds, not more than four feet wide, and covered with an inch of soil; before covering them, however, it will be well to fix the seeds by blows from a spade, as this prevents their being dragged to the surface when raked over.

Planting. The young plants should be kept free from weeds. If too thick they should be removed into lines. They should at the end of the first year be removed into nursery lines, and the following year they may be transplanted, if they have made good use of their time; if not, they should be allowed to remain one more year; or if large plants are required, they may be transplanted again. It is a good plan, when planting out, to nurse the young plants with silver fir, as these grow well under a leafy canopy, and serve to strip the stems of the beech of superfluous branches, and to retain the moisture in the soil.

The beech, however, is usually naturally reproduced, but for occasional planting, or for use as a hedge plant, a good stock in the nursery is exceedingly useful.

For timber purposes. If required for timber, they should be planted together somewhat closely, and to prevent lateral growth should be kept close for some years. This should be attended to in the thicket stage, if naturally reproduced.

Beech as a hedge plant.

As a hedge plant the beech is invaluable, but as such it will be fully considered under the head of "fences."

Masting.

The "mast" is an excellent food for pigs, and on commons where the beech grows, large herds are often fed. The ancient common-right of "masting" pigs was, and still is, a valuable interest, particularly in the case of common-rights in the Royal forests.

Varieties.

There are several varieties suitable for ornamental planting, the principal of which are: The purple beech (*Fag. S. purpurea*), the copper beech (*Fag. S. cuprea*), and the fern-leaved beech.

The purple beech is a native of Germany, and it is from the seed of this that we have obtained the copper beech. The purple beech, pure, can only be obtained by grafting.

The fern-leaved beech, too, is a pretty tree, but does not equal in magnificence the common variety. It, however, forms a contrast with other foliage, and can be recommended for lawns and pleasure grounds.

Grafting should be resorted to in all nurseries, so that a constant stock of ornamental trees may be at hand when wanted.

Price and weight.

30 to 32 cubic feet = 1 ton.

Value of beech, from 6*d*. to 1*s*. 6*d*. per cubic foot.

The price of beech varies in accordance with quality and demand, but if of large girth and white in colour a full price can always be obtained. It is a heavy timber, but loses much weight in seasoning.

THE HORSE CHESTNUT (*Æsculus*); Linnæan system, *Heptandria monogynia*.

Horse chestnut.

The Horse Chestnut (*Æsculus hippocastanum*) is not a native of Great Britain. Its original habitat is doubtful, but it is supposed to have been introduced about the sixteenth century from the East. It is one of our most beautiful flowering trees, and as such is grown; its timber bearing no special value.

It attains great size in good situations, throwing out long and drooping branches, often sweeping the ground; forming splendid shelter for deer and cattle.

But a short time elapses between the first forming of the bud and the full expansion of the leaf and flower; the full umbrageous head of the tree forming a great contrast to the surrounding trees, whose leaves take more time to burst through their covering.

When in full flower it forms a lovely addition to the landscape, and the seed, which ripens early, is also very beautiful as it forces its way through its thorny cover; forming not only a favourite toy for children, but a rich meal for deer.

Propagation.

It is readily propagated from seed. They may be sown any time in winter; if the beds are 4ft. wide, one bushel of nuts will sow a bed 20yds. in length. The young plants are left in the seed-bed one year, when they are transplanted into nursery lines one foot apart, and one foot between the lines. When they have been two years in the lines they are ready for planting out permanently. Owing, however, to the fibrous nature of the roots, the chestnut may be planted out when it has attained considerable size, thus fitting it for parks and avenues. Owing to the plant maturing its young wood early, it is capable of standing frosts better than many other kinds.

It should be protected when young from bite of cattle and deer, as the foliage is much relished by them.

On rich loams this tree should never be forgotten, when laying out parks and woods, especially when in prominent situations; it should, however, in all cases form an outside tree.

Weight and price.

32 to 35 cubic feet (in the round state) = 1 ton.

Price from 6*d*. to 1*s*. per cubic foot.

THE SWEET CHESTNUT (*Castanea*); Linnæan system, *Monœcia polyandria.*

Spanish chestnut.

The Spanish Chestnut (*Castanea vesca*) derives its name from Kastanea, a city in Pontus, in Asia, of which locality it is a native. It is supposed to have been introduced into Europe by the Greeks 500 years B.C., and brought into England by the Romans.

It is a highly ornamental tree both in foliage and fruit. It flowers in May and June and ripens its fruit in October. The flowers (that is, the male flowers) are long catkins, growing in bunches, the fruit or nut is inclosed in prickly husks, each husk inclosing three nuts. The nuts are farinaceous and sweet, hence its name "sweet chestnut." In this country the fruit seldom ripens, or even attains full development, but in the south of Europe, particularly in Spain, it is a produce of importance, and is exported largely into England.

The young wood, unlike the common chestnut, ripens late, and is, consequently, unable to withstand early frosts. When established, and for the first twelve years, it grows very rapidly, often three feet or more each year. The growth is often of a twisted or spiral form, which shows itself in the bark. In some cases this is most marked.

The tree attains to a very great size, and almost fabulous measurements are given by various writers. The timber is very valuable, being hard and durable; it ranks with the oak for purposes where it is not exposed to weather, and may be used in its place when procurable. Unlike the oak, however, the timber is most valuable when young; when above sixty years of age and even earlier it becomes ring-shaken and brittle. It is supposed by some that the roof of Westminster Hall and the roofs of many of our old churches consist of this timber, but the probability is that they have mistaken it for that of the sessile-flowered oak. The tree not being a native, points to the impracticability of obtaining timber of such dimensions in remote ages. Tusser mentions the tree in his writings in 1512, but leads us to suppose that it had been only recently introduced. It is valuable as an underwood plant, being a free grower from stools when "cut over." It will, however, be noticed as such in the chapter devoted to underwood.

Soil. It thrives best on a sandy loam. Stiff clays and cold-bottomed lands are not suited to its full development. This marks it out as a suitable tree in poor soils unfit for the production of oak.

Propagation. English seeds, if procurable ripe, should be used for propagation, as those obtained from abroad, though much finer, are often kiln-dried before being exported. They may be sown in drills sixteen inches apart, and covered with two inches of soil. They should be sown in April, as if sown in autumn the late frosts in spring often destroy the young plants. They are allowed to remain one or two years in the seed-beds, they are then transplanted, and when this is done they should be separated into sizes. Before being planted, also, the tap-roots should be cut off; this is highly important in all fruit-bearing trees. They should be left two years in the lines, when they will probably be about three feet high, and may then be finally planted out. If large trees are required for special purposes, they should be transplanted every two years, that their roots may become fibrous, being each time allowed more room. **Price.** The price of young and well-grown boles may be stated at 2*s.* per cubic foot.

THE WALNUT TREE (*Juglans*); Linnæan system, *Monœcia polyandria.*

Walnut. The Common, or Royal Walnut (*Juglans regia*), is grown for its fruit, but is at the same time ornamental and useful as a timber tree. It is a native of Persia, and was introduced into this country about 300 years ago. **Treatment.** Being a *bonâ fide* fruit tree, it should be grown as such, and consequently should be transplanted two or three times before its final planting, taking care, as already stated, to cut off the tap-root. When this is neglected, or when they are allowed to grow without attention, or from self-sown seed, the fruit seldom fills or ripens, and the tree will be tardy and late in growth.

Fruit. It flowers in May and ripens its fruit about October. The seed is enveloped in a husk, but bursts from this when fully ripe.

Propagation. It is propagated from seed (fully developed nuts should be selected), the treatment being very similar to that of the chestnuts. Sow in autumn, soon after gathering, and cover with two inches of earth. When the young plants appear, cover them with larch trimmings, or roughly litter, as they are easily injured by frosts. They should be left in the seed-bed until the following year, when the strongest plants may be transplanted into lines; the weaker ones being left another year in the seed-bed. At the end of the second year transplant again as already explained.

Soil. The soil should be deep and dry, as the roots run deep. A strong loam is the best, but if dry it will thrive on a variety of soils.

Uses of the timber. The timber is very useful, and a high price can be obtained when old and well-matured. The heart-wood is very hard and dark in colour, the sap-wood is white and of little value. It often yields a beautiful grain, especially near the bottom, and is much prized for purposes of high-class veneering; but it is from the "*burrs,*" caused by insect attack, that the most beautiful grain is obtained for veneering. The collection of these "*burrs*" in Western Asia is an industry of some importance. It is susceptible of a high polish. The roots also yield a beautiful grain. It is used for drawing-room furniture, pianos, and gun-stocks. A dye is extracted from the roots, and an oil from the nuts.

Price. There is not much demand for English grown walnut, but from 1*s.* to 1*s.* 6*d.* per cubic foot may be obtained.

THE POPLAR (*Populus*); Linnæan system, *Diœcia octandria.*

Poplars.

The Poplar (*Populus*) is a deciduous tree. It is unisexual and diœcious, *i.e.*, having but one sex upon each flower, and these upon different trees. It is a genus of many species, and each species possesses many varieties. Some of these are natives of Great Britain, but they are found more or less throughout the world. It is not necessary, however, to dwell upon any except those that are met with in this country, and that at the same time bear ornamental or commercial value.

These are (1) the Black Poplar (*Populus nigra*), a free-growing and exceedingly ornamental tree. It grows rapidly in suitable soils, especially if near running water. A very fine specimen, blown down in the great gale of 1894, measured fifty-five feet, timber length; circumference at base, thirteen feet; mean quarter girth, twenty-seven inches, yielding a cubic contents of about 280 feet. The age of the tree did not exceed ninety years. It is a tree of the first magnitude and should be grown on suitable soils.

(2) White Poplar (*Populus alba*) or Abele-tree is another variety of the first magnitude. It attains large dimensions in a comparatively short period. The character of the tree, especially in its general outline, is similar to the Black Poplar. The leaves, however, are different. They are slightly palmate or quinquangular, dark glossy green on the upper surface, and white on the under surface, whereas the leaves of the black poplar are "cordate."

(3) Aspen (*Populus tremula*) is another variety which grows to large dimensions. The general outline is similar to the foregoing, but the leaves on the same tree vary much and partake somewhat of the characteristics of the two fore-mentioned.

The leaf stems of all poplars are flattened, but this is so in a marked degree in the Aspen; owing to this the leaves tremble with every breath of the wind, hence the name.

As a nurse to more slow-growing trees, such as the oak, silver fir, and others, the poplar is invaluable, as it rapidly grows to a size which admits of its being utilised when it is necessary to cut it out. Neither is it by nature a tree that smothers, like some nurses do. **As a nurse.**

This species grows best in deep, moist loams, but not where there is stagnant water. On the banks of streams, if not too near to water, it grows to large dimensions. On thin hill land it will be found useless to plant it. **Soils.**

The timber is white, soft, and loose in texture, but possesses valuable qualities; it is used chiefly for railway brakes, packing cases, wheelwright's work, wheel-barrow and cart bottoms, church furniture, &c. **Uses.**

The value per cubic foot may be stated at 6*d.* to 8*d.*, but the value to the grower lies in the fact that at least three times the amount of timber is formed than is the case in other trees. **Price.**

It is propagated chiefly by cuttings, though in its natural state the white poplar seeds freely. These cuttings may be transplanted into nursery lines after the first year, and the second year they will be ready for planting out; though if desired they may be again transplanted. The propagation is exceedingly easy, and requires only ordinary care and attention. **Propagation.**

(4) The Lombardy Poplar (*Populus fastigiata*) is known by its straight, upright growth, hence its name, "brought to a point." As a timber tree it is of little value, but it deserves a place in ornamental planting.

There are many other varieties, such as the Ontario Poplar (*Populus macrophylla*), the Grey Poplar (*Populus canescens*), and others.

THE BIRCH (*Betula*); Linnæan system, *Monœcia tetrandria.*

The Common Birch (*Betula alba,* Lin.) is a native of Great Britain and the high lands of Europe. It is exceedingly hardy, being found at high altitudes, often several **Birch.**

thousand feet above the level of the sea. It also thrives in northern latitudes, almost to the extreme limit of vegetation.

In Scotland, it grows in coppices, glens, and ravines. It is able to resist drought, but will, nevertheless, grow on swampy soils; it will also grow where fir plantations have been removed, and soon makes good cover under those circumstances. The birch is peculiar in this respect, as but few ligneous plants will grow where firs have been, owing to the peculiar exuviæ from their roots.

Propagation. It ripens its seeds in September, and they are collected and placed in thin layers until dry, when they may be packed in casks or boxes until March, when they may be sown in seed-beds. The best soil for this purpose is a friable peat. The seed should not be deeply covered; it may, in fact, be sown on the surface of the seed-bed and beaten in with a spade, or if the soil is light they may be trodden in, and may then be left. A bushel of seed will sow a bed four feet wide and thirty yards long. At a year old the plants will be six or eight inches high. If too thick they should be thinned, those taken out being planted into nursery lines. The others may be left for another year, being kept free from weeds. When two or three years old they may be planted out.

Uses Twigs of the birch are used for broom making, the larger stuff for hoops. The timber is white, with pink centre, and of loose texture. As a fuel it bears but little value, but the smoke it evolves is considered the best for drying herrings. Its bark is valuable, but cannot rank with oak; for tanning fishing nets, however, it ranks high. As a charcoal it is much esteemed by gunpowder makers.

In parks and ornamental planting it should be allowed a prominent place, as its delicate foliage and silvery bark give a very pretty and pleasing effect.

Varieties. There are many varieties, as the student will find if he visits the beautiful gardens at Kew. Among them we may mention the *B. excelsa* and *B. papyracea*, or paper birch.

The price of birch varies, but from 4*d.* to 6*d.* per cubic foot may be obtained.

Price.

THE ALDER (*Alnus*); Linnæan system, *Monœcia tetrandria.*

Alder.

The Common Alder (*Alnus glutinosa*) is an aquatic tree. In moist situations it will attain considerable size, sometimes a height of fifty or sixty feet, with a corresponding girth. It matures early, and, if not cut when maturity is reached, soon decays. As an ornamental tree it is not to be recommended. On low-lying and wet meadows it is useful, both as a profitable crop and a reclaimer, serving not only to dry the soil, but to add to its fertility by the fall of leaves. As a hedge plant it is valuable in swampy districts. As a nurse it is often useful, owing to its rapid growth.

Price. **Uses.**

As a timber it may be sold for 1*s.* to 1*s.* 3*d.* per foot. It is used by last-makers, turners, cabinet-makers, clog-makers, and by agriculturists for cart bottoms, handles to farm tools, &c., and in cotton and linen districts it is largely in demand for bobbin wood. In districts near the sea-shore it is used for fish barrels, being fit for this purpose when twenty years old.

Immersion in water before use.

As the timber is very subject to the attack of insects, it is necessary to immerse it in water for two months after felling, first stripping off the bark, and if one bushel of lime is thrown into the water it will greatly assist the process. When thus treated it can be used for purposes for which it is otherwise unfitted, as this process hardens the grain.

Propagation.

It is propagated from seed, which may be collected at the end of October. The seeds are contained in a small cone. The cones should be placed in a dry room, about six inches thick, and constantly turned over until April, when they may be thrashed, sifted, and cleaned. They must then be moistened with warm water, only just off the chill, and dried; they are then ready for sowing.

Beds four feet wide may be prepared for the seeds in moist meadow land, being dug with a spade. The seed must be sown thickly and trodden in, it being quite unnecessary to cover them very carefully.

By the autumn they will be nine or twelve inches high, when they may be planted into nursery lines. Here they may remain for one or two years, being kept free from weeds. At the end of this period they will be ready for planting permanently where required.

By river sides, swamps, water-meadows, and in odd wet corners they may be advantageously grown. Plant four feet apart in rows, and give them fair attention, as pruning and thinning must go together. But always keep a good head of leaf, and do not sacrifice a limb except when absolutely necessary. The thinnings can be sold for hoops, barrel staves, and fagots, and, as they advance in size, for other purposes.

As a charcoal. Plantations of alder coppice are often sold by auction, when they are generally purchased by charcoal burners; the charcoal being highly valued for the manufacture of gunpowder and for use in chemical works.

As a dye. When cut young, dyes can be extracted from the catkins and twigs.

From the foregoing remarks it is clear that this tree possesses merits which by no means permit its being overlooked in the improvement of estates situated in fens or low-lying districts.

THE LIME TREE (*Tilia*); Linnæan system, *Polyandria monogynia.*

Lime. The Common European Lime Tree (*Tilia Europæa*), sometimes called the Linden or Teil tree, is supposed by some to be a native, but it was probably introduced into this country about the sixteenth century from Germany, Russia, and other parts of Europe. Many of the foreign trees now looked upon as natives were introduced about this period by enterprising planters.

Chap. III. Sect. 1. *Timber.*

The foliage of the tree is exceedingly beautiful and graceful. The leaves are entire and very umbrageous. It flowers very freely in July, yielding a pleasant scent and a great quantity of honey, and ripens its seeds in October. The seed-pods are in the form of small balls, hanging in clusters on delicate thread-like stalks. They may be sown in April, and their treatment is similar to that already discussed. When, however, purity is required, it is necessary to propagate by layers, as this tree has a peculiar tendency to degenerate by hybridism. Layers always turn out the exact reproduction of the parent tree.

Propagation.

The method of layering is very simple, and is practised in most nurseries. A young tree is cut over and allowed —as it readily will—to throw up young shoots from the stool. These are laid over in autumn or spring, and pegged down and covered with a mixture of fine mould, sand, and ashes. They soon take root, the lime being a soft-wooded tree, and at the end of the first year they may be separated from the parent stool, and planted out in nursery lines: (see Fig. VI.)

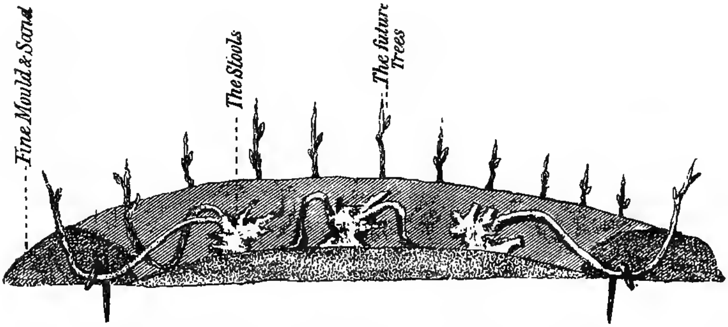


Fig. VI.—Section showing method of propagation of lime (*Tilia Europœa*).

The young plants may be transplanted once or twice to increase the root-fibre, and then be planted out where required.

It may be prepared by repeated transplantings for ornamental planting in streets, thoroughfares, parks, and pleasure grounds, when quite of a large size.

It is used principally for avenues, but is also a beautiful park tree.

Street planting. For street planting in large towns it is perhaps one of the best trees. It is early, hardy, speedy in growth, and indifferent to lopping or cutting back; and is capable of training into arches, or other fantastic shapes.

In such situations it is best to treat it artificially, and to keep it within bounds, as, if left to its natural instincts, it will soon become too umbrageous for limited spaces. The branches in early spring may be shortened back to another side branch, but, if possible, the cutting off of large limbs should be avoided.

Uses. The timber is soft and white, sometimes yellowish. It is used for carving and fret-work, moulds for foundries, and model-making. The inner bark also forms an important item in the value of the tree, being used by gardeners for tying plants, making mats, &c. When the utilisation of this bark is intended, it is necessary to fell the tree in spring, when the sap is rising, in order that the bark may separate freely from the stem. But the collection of this is confined to Sweden and Russia, and is not practised in this country. The wood forms when burnt a charcoal useful for the manufacture of gunpowder.

THE MAPLE (*Acer*); Linnæan system, *Polygamia monœcia.*

Sycamore. The great Maple or Sycamore (*Acer pseudo-platanus*) was introduced at an early period from the central parts of Europe. Whether it is a native of Britain or not is uncertain, but there seems to be no doubt that its cultivation arose through imported plants.

In form it is an exceedingly ornamental tree; its leaves are lobed and palmate, its seeds samarous or winged, the clusters of which add to its beauty. The leaves are apt to

Honey-dew.

exude a sticky substance called honey-dew, which retains the dust, and gives to the tree a dark and dull appearance. What honey-dew is is still a matter of dispute. By some it is supposed to be a sweet exudation from the leaf; by others to be the deposit of aphides. It is, however, clear that upon the leaves of the hop plant it does not show itself until after the presence of the fly. Whether, therefore, the fly actually deposits the substance upon the leaf, or whether it punctures the leaf so as to allow of the exit of a natural juice, still remains undecided. Notwithstanding this it is a lovely tree, and should find a place in all ornamental planting. It is well adapted to street planting, but for this purpose it does not equal the plane.

Uses.

As a timber tree it is valuable, especially in districts where there is a demand for soft, white wood. It grows rapidly, and may be profitably used when it reaches a quarter girth of nine inches. It is in demand for rollers of washing machines and mangles, wooden bowls and dishes, furniture, bobbins, turning, toy-making, ship-blocks, and many other purposes. The value greatly depends upon its colour; if pure white it will fetch a high figure as a fancy wood, but if stained the value will be low. To secure this whiteness the trees should be felled in winter, and removed at once from the wood; as soon as possible they should be sawn into planks, and placed until seasoned in a dry place. Colour, too, is a sign of age; when young the wood is white; as age advances a pink and brown tinge is apparent towards the heart.

Propagation.

It is propagated from seed, which is ripe in October. It may be collected when ripe, and mixed with double the amount of sand, and kept until April, when it may be sown in seed-beds, as already described. The seeds may, if preferred, be sown in October immediately after gathering. After standing one year in the seed bed, the plants may be removed to nursery lines, where they should remain two years. This tree may also be grown from cuttings. It grows rapidly, and is therefore wisely selected where shelter and blinds are required. It is very umbrageous, and throws an impenetrable shade.

Pruning.

The pruning chisel should be used sparingly, and if possible avoided altogether. If necessary, however, it should be confined to branches not exceeding two inches in diameter. If more than this, the branches should be shortened only. If pruned in early spring, the summer growth of the young wood being rapid, the wound soon heals. Be careful to cut close to the stem, as already described.

Price.

If the wood is white, and the girth good, the demand will be brisk, and 2*s.* a cubic foot may be obtained. For stained or inferior samples the price will not exceed 8*d.* to 1*s.* a cubic foot. In the North of England, for trees of large magnitude, that is, with a diameter of 18 inches and upwards, as much as 3*s.* 6*d.* a foot will sometimes be given.

Soil.

All the maple tribe prefer a reasonably sheltered situation, a free, deep, loamy soil, and neither too wet nor too dry. They grow rapidly when established, and few failures will be found if the soil and site are wisely selected.

Varieties.

There are many varieties of maples, and among them may be mentioned the common English maple (*Acer campestris*). This tree is usually found in hedge-rows, and seldom of large size. It possesses but little value. The sugar maple of Canada (*A. saccharinum*) is imported largely into this country for high-class cabinet work, and is known as the "bird's-eye maple."

There are, too, many variegated varieties for ornamental planting, which are obtained by grafting on the common stem.

THE PLANE TREE (*Platanus*); Linnæan system, *Monœcia polyandria.*

Plane.

There are several varieties grown in this country, the *P. orientalis* and the *P. acerifolia,* or the Eastern and Western planes.

They are very similar in form and habit and may be considered together. The former is more delicate in structure, that is, of lighter foliage, owing to the leaves being smaller and more deeply cut; but not more delicate in constitution. The latter has the appearance of being more robust, and is more umbrageous. The fruit of the latter plane is similar to that of the Oriental plane in so far as it hangs like a beautiful tassel, but the tassels are larger and smoother. The bark of each, as in the case of the maple family, flakes off, leaving white and pale green spots upon the stem, which is both characteristic and beautiful.

Propagation. They may be propagated by seed. This should be collected in November, and may be immediately sown in a well-prepared bed, or kept in the husk until the spring. They should be only lightly covered, and some light litter should be spread over the bed to protect the young plants from frost. The plants will come up in the spring, and after being in the seed-bed a year may be transplanted into nursery lines. Here they may remain for two years, when they may be again transplanted. If this is carefully attended to they may be finally planted out when of a large size.

They may also be propagated by layers or cuttings, and, in fact, this plan is to be preferred to sowing. These methods have already been explained, so we will not say more than that layers and cuttings root freely.

Economic uses. The plane is grown in England for ornamental purposes only, and it is seldom the timber finds its way into the market. It is not held in high estimation either in this country or elsewhere. It is similar in character to the sycamore, but not so white, except when quite young. It is, however, used for the same purposes.

Pruning. The same remarks as were applied to the sycamore are applicable here.

Street planting. For street and town park planting the plane has no equal. It thrives in the most smoky atmosphere, and in the most squalid districts of our large towns; and in London many fine specimens are to be seen. It bears close branch-pruning like the lime, and may therefore be kept in subjection; but, as before stated, large limbs should not be cut off if it can be avoided. The plane of the London streets is chiefly the *P. acerifolia*; but fine specimens of the *P. orientalis* are also seen.

Soil and situation.

This tree thrives best on a light but deep soil, moist and cool, but not wet. On clays, especially if in cold and exposed situations, it will not thrive, and should not be planted. On sandy soils containing much vegetable matter and near running water it perhaps thrives best.

The Willow (*Salix*); Linnæan system, *Diœcia diandria.*

The Willow family consists of many species, but only a few can be classed as forest trees. Among these are the common white willow (*Salix alba*), the Bedford willow (*Salix Russelliana*), and the cracking willow (*S. fragilis*).

In addition to these are the goat willow or sallow (*S. caprea*), the osier, varieties of the *Salix viminalis*, and the ornamental or weeping varieties.

The Common White Willow (*Salix alba*) is found over the whole of Great Britain and Ireland; and, in fact, over the greater part of the northern hemisphere.

This tree, from its light and airy foliage, so unlike any other of our timber trees, deserves a place in all parks where the soil is suitable to its development. The leaves of all the willows are very similar in shape. They are what are termed *elliptic-lanceolate* and serrated. In this case they are covered with fine silky hairs, which lie closely on the leaf, giving the white appearance to the foliage when moving in the wind which is so familiar to the eye of the lover of nature.

Soils.

It delights, like all its tribe, in deep moist soils, but will not thrive in wet or very dry land.

Economic uses.

When it reaches timber size it is valuable for many purposes. It does not easily split, and is therefore used for cricket bats, the bottoms of carts, barrows, stone and coal trucks, boat fenders, clog making, church chairs, and such like.

Pruning.

This tree should not be pruned, as, being very soft in texture, the wound will not heal in time to prevent decay. Necessity for pruning should be avoided by careful management in the nursery.

Propagation.

No tree is easier of propagation. All that is required is to make cuttings from the young wood and plant them in a moist bed in the spring. In the following autumn they may be planted out. Cuttings from older wood may be used, and, in fact, almost any piece of wood of whatever age or size will grow if planted. This plan, however, is not recommended.

The Bedford and cracking willows need not be individually described. They are very similar to the common willow, except that the former has no hairs upon the leaf, and is more bold in outline.

Goat willow.

The *S. caprea*, or goat willow, unlike the rest of the tribe, possesses roundish ovate leaves, pale green, and downy beneath. It is small, and seldom reaches timber dimensions. It is, however, a useful coppice plant, especially on moist soils. It will, however, grow fairly well on dry upland soils. It makes a valuable hop-pole, being light and durable. It is useful, too, for hurdle making, hoops, rods for crates, and such like purposes.

In existing areas it may be propagated by layers, or it may be grown, like the others, from cuttings. On moist soils the cuttings may be planted where they are to remain, but if required on dry upland soils it will be best to propagate them in the nursery.

For embankments.

For embankments near water it is invaluable; stakes taken from full-grown coppice plants driven into the ground and interlaced with branches of the same will take root and grow, and so form a barrier of great strength and durability.

The timber is white, soft, and light, and is used for the same purposes as the alder.

Osier.

The dwarf willow, or Osier (*Salix viminalis and varieties*), bears a high value, as it yields an unusually large income to the owner.

Plantations of these are found near rivers, for example, at Staines, Windsor, and other places near the Thames; and many acres of marsh land now valueless might be made to yield a considerable annual income at a very moderate outlay.*

Drainage.

All that is required is to cut surface drains in such wet parts of a meadow as it may be considered advisable to plant; such drain should be 1½ft. wide and deep enough to carry off the surface water, and 10ft. or 12ft. apart. If near the bank of a river it is well to cut the drains at an angle of, say, 67° with the flowing water. The water then is constantly changed, and does not become stagnant.

Propagation.

Then take cuttings from one-year-old shoots, about 14in. long, and thrust them into the soil about two-thirds of their length.

Cultivation.

In well-managed osier beds the soil should be first trenched and cleaned, that is, rendered free from creeping rooted grasses, and then dug over each year in the autumn. This will be found to be of great benefit, especially when the beds are young. It is, too, a wise plan to dress with farm-yard manure at least once in two years.

The plants should be 18in. from each other in lines, the lines being 2ft. or 2ft. 6in. apart, according to the demand in the district for basket or other sizes. In three years they will attain full growth, when they may be cut; after this they come to cut annually. The shoots should not be allowed to stand more than one year.

Uses.

They are tied in bundles, according to sizes, and sold to basket makers.

---

* The planting of osier beds will be found as one of the improvements in Part 1, Schedule 1, of the Agricultural Holdings Act, 1900.

Ornamental varieties, and weeping willows, are propagated by grafting on the stem of one of the common varieties.

Weeping willows.

THE ELDER (*Sambucus nigra*).

Elder.

There are several species of this tree, but it will be only necessary to consider the common elder (*S. nigra*).

It is a native of Europe, Asia, and Africa. By nature it is more of a bush than a tree; but, as the stem when fully grown possesses a special value, we have considered it best to include it in the list of timber and timber-like trees.

Medicinal and other uses.

It produces in June large clusters of creamy white flowers, produced in terminal cymes, and these in their turn, in the autumn, yield large masses of black berries. It is by no means a desirable plant to have near a dwelling, having little beauty, and emitting a sickening odour when in flower. As a medicinal plant it has various uses; the flowers are used for the manufacture of lotions and ointments, and are also convertible into a kind of wine. When dry they can be used as a tea, which is very debilitating in its effects, producing great perspiration. The inner bark is an active cathartic, and from the berry is made the well-known elder wine, so much prized with chestnuts round the village Christmas firesides.

In bleak situations, and near the sea, it forms a very useful shelter; the points of the branches become injured by the wind and salt air, but they throw out fresh lateral shoots, and so become thicker and more dense, thus turning what might be a disadvantage into an actual benefit.

The growth of the young plants is very rapid on suitable soil; the young shoots will sometimes attain a growth of 5ft. in one summer.

Useful for shelter.

As a hedge plant it is useless, and in fact, when present in any old hedge, it will be best to exterminate it by grubbing. As a shelter, however, round young plantations, it is valuable.

Propagation.

It is propagated readily by cuttings. Take the new growth, and cut into lengths 1ft. or 14in., leaving a bud at the bottom and at the top; and plant them any time from November to March, in lines 1ft. apart, and at a distance of 9in. from each other in the lines; when a year old they may be planted out.

Uses.

When young the stem contains a large pith, which, however, as the plant advances in age, disappears. When old the wood is yellow and glossy, and will take a fine polish. It is used for the manufacture of mathematical instruments and shoemakers' pegs.

With all these merits, however, it is a plant but little grown, and may be deemed a weed amongst trees and shrubs.

Varieties.

There are a few ornamental varieties, among which are the golden and scarlet-berried, which should be allowed a place in pleasure grounds.

THE HORNBEAM (*Carpinus*); Linnæan system, *Monœcia polyandria.*

The Common Hornbeam (*Carpinus betulus*) is a native of England, Ireland, southern parts of Scotland, Central Europe, and Western Asia. Though not grown largely in England, it is a useful and saleable tree when found. That it is so seldom found as a timber tree is owing to the indifference of landowners in all things relating to forestry rather than to the want of good qualities in the tree. It is usually found as a hedge-row plant, or as a stunted, ill-grown tree in wild and neglected woodlands. It is capable, however, upon clays and clay loams, of attaining to large girth and height, and may rank among our best timber trees. We have seen fine specimens of this tree, and therefore write from experience.

By many who are not acquainted with the tree it is taken to be a species of beech, which in some respects it certainly resembles; but to the more experienced eye this resemblance is transitory. The leaves in shape are somewhat similar, but are more deeply serrated in the edge, and plaited or ribbed on the surface. The seed, too, is totally different to the mast of the beech, having a flat, three-lobed, leafy appendage attached to it, and hanging in lax catkins.

Uses. The wood is white and exceedingly hard and cross-grained, and is used by brewers for cog-wheels, and for purposes where wooden gear is preferred to iron. It is used by rural wheelwrights when procurable; for firewood-the heat from it being intense.

In seasoning it shrinks very much and rapidly, so that it is necessary to nail strips of wood on each plank as soon as sawn, and to keep it in a dry and airy place.

Propagation. It is grown from seed, which ripens readily in England, and early, for it may be collected and sown in October. It will lie dormant for some time in the bed; but when one year old the plants may be planted out in nursery lines, and be allowed to remain there for two years.

We have now described those deciduous trees which are usually found in English woodlands, and which possess economic qualities. There are, of course, many more which are met with, and many varieties of those already described; but there seems no necessity to carry our readers beyond the region of practical forestry, for beyond this we are apt to trespass on the property of the landscape gardener.

We would not, however, for one moment wish to deprive the forester of the beauty which attaches to his magnificent calling, but impress upon him the advantages to be gained by growing such trees as confer not only an economic value upon his woods, but those which add to the capital value of the estate by their presence rather than by their removal.

We will, therefore, content ourselves by enumerating those trees which should be planted among others for the sake of scenic effect. Nevertheless there are districts where even these possess, when of fair dimensions, a considerable market value.

The Tulip-tree (*Liriodendron tulipifera*), one of the great magnolia family and a native of North America, is a tree of great beauty. It must, however, stand alone, so that the beautiful foliage may be unimpaired. The leaves are peculiar, unlike any other seen in this country, similar to the plane in colour and texture, but with the centre lobe cut straight across. On young wood these leaves sometimes attain great dimensions, for we have ourselves measured one and found it to contain nearly 100 square inches on the surface. The tree flowers in July, which further adds to the beauty. It may be propagated by cuttings.

Propagation.

It should be planted in a sheltered situation in a dry loam, but not crowded among other trees.

The Mountain Ash (*Pyrus aucuparia*), perhaps better known as the *Rowan-tree*, should not be forgotten on poor soil and exposed situations. It is beautiful in foliage, flower, and berry. It has, too, an economic value, especially in the linen and cotton districts.

It is propagated by seed, which, however, must be gathered immediately it is ripe, as birds are very fond of it, and will leave none if not protected. When collected the seed must be treated like the hawthorn-seed, as will be hereafter explained. It may also be propagated by cuttings.

The Common Laburnum (*Cytisus laburnum*) is too well known to require a place here. Its hardiness and beauty, however, stamp it at once as a tree adapted to the sides of roads, margins of plantations, and pleasure grounds. No plant is more easily propagated, either from seed or cuttings; therefore the forester should be well supplied, and able to place a tree here and there where effect is desired. When of large size the wood is very valuable for turning purposes, and will fetch a high figure.

The False Acacia or Locust tree (*Robinia pseudo acacia*) is worthy of a place in the landscape. Its foliage is light and pretty, and forms a contrast to the more massive foliage of our forest trees. It is a native of North America, where it reaches a great size under favourable conditions. It thrives best on a dry and light loam. It is readily propagated by imported seed, or it may be taken from suckers, or grown from cuttings; but the few that will be required had better be bought from a nurseryman.

The Common Hawthorn (*Cratægus oxyacantha*) may be considered as a tree or a hedge-plant. In this country it seldom rises above the latter; but in Ireland we have known it reach a saleable size. It is, however, a beautiful plant, especially in May and June, when its lovely blossoms delight all true lovers of nature. Seen in its full massive beauty it is "a thing of beauty" not surpassed perhaps in our wild flora.

It is found in most parts of Europe, as well as in Western Asia, and in all parts of Great Britain and Ireland.

Uses. The wood of the common hawthorn is hard and capable of taking a good polish, but there is little or no demand for it, except in the cotton and linen districts, where it is used for bobbins.

Its use in this country is as a hedge-plant, and for this purpose it has no equal. If planted with care in well-prepared soils, it will, in a few years, make an impenetrable barrier against all kinds of stock. Success, however, will greatly depend on management. (See Fences, *post.*)

Propagation. This tree is propagated by seed, or *haws,* as they are termed. The *haws,* which are often abundant, are ripe and ready for gathering in October and November. This may be done by boys at a price per bushel.

When gathered they are delivered to the nurseryman, who will mix them with sand or fine sifted mould, about equal in bulk to the haws. They should be pitted in the open air—say two feet in depth and three or four feet broad at the base; and, to prevent heating during the decomposition of the pulp, they should be turned every two or three weeks. They should lie in this heap for fifteen or sixteen months, and should then be sifted and prepared for sowing.

They should be sown in February or March in beds three feet and a half wide, in which the mould has been well prepared. The mould should be light, and, if not naturally so, should be rendered light by addition of sand. The sowing should be regular and uniform, at least a square inch being allowed to each seed, and the whole be covered with not less than half an inch of mould. They should stand one or two years in the seed-bed, when they may be planted into nursery lines two or three inches plant from plant, and twelve inches apart. The strongest plants will be ready for finally planting out in one year, and the whole in two years, from this period. If there is an overstock in the nursery the plants should be cut back until required.

Varieties. The coloured varieties are propagated by budding or grafting on the stocks of the common thorn. This may be done by the young men in the nursery about the month of May or June. It is well to have a good stock of these in hand, as they are always beautiful.

SECTION II.

THE CONIFERÆ, OR CONE-BEARING TREES; THEIR PROPAGATION, TREATMENT, AND USES.

IN addition to the deciduous timber trees which we have just considered, we have to speak of another and important class of trees—most important indeed in this particular, that it is the class which will, perhaps more than any other, force itself upon the attention of the land agent. We allude to the "Coniferæ," or cone-bearing trees, a natural order containing many genera. The most important are the *Larix* or Larch, the *Pinus* or Pines, the *Picea* or Spruce, and the *Abies* or Firs; and in this order we will consider them.

Larch.

The LARCH (*Larix Europœa*).—This tree belongs to the natural order Coniferæ, and is the only one of the tribe that is deciduous.

It is a native of the French and Swiss Alps, Apennines, and Tyrol, and was introduced into England early in the seventeenth century.

It rejoices in open, but flourishes in all situations, whether high or low, provided it can have air and light and a dry sub-soil. The roots ramify near the surface, but it cannot live with stagnant water beneath. On hillsides or near running streams it reaches, perhaps, to its greatest dimensions. It is a monœcious plant, bearing its pistils and stamens in different flowers on the same tree, as already explained.

In Scotland it attains maturity earlier than in England, and is more hardy, owing to the situation being more in conformity with its natural tastes.

It blossoms early, and in spring forms, with its light green leaves or spines and its brilliant vermilion flowers or young cones, a beautiful object; forming a striking contrast to the surrounding trees, still enshrouded in their winter garb; and the contrast, though different in kind, is scarcely lessened as the season advances and the tree attains full development of foliage.

Treatment of cones.

The cones for purposes of propagation should be carefully selected from well-grown and healthy trees. They are collected at the latter end of winter, and the seed is extracted from the cones by various processes.

The most approved method is to lay the cones on a timber kiln about six inches deep, and expose them to a heat of 100° Fahr., turning them twice or three times with a shovel. Ten hours ought to be sufficient to attain the object if the temperature has been carefully kept up; if not, a longer period will be required.

The heat will not separate the seed from the cone: when dry, they must be taken from the kiln and threshed, and then dressed with ordinary fanners.

Price of seed. The cost of this process may be reckoned at 3*d.* per lb., and the usual price of seed is 1*s.* to 1*s.* 6*d.* per lb.

Propagation. The seed should be sown in April, in a light sandy soil, and covered to the depth of a quarter of an inch. One pound of seed will suffice for a bed of four square yards. The soil in which they are sown should not be dressed with any manure, but a soil from which a crop has been taken, and which has been manured for that purpose, will probably be beneficial.

The young plants will appear in about three weeks. Weed them carefully and protect with branches from frosts. They will be six or eight inches high in September. If too thick, they must be thinned, and those taken out should be planted in rows about fifteen inches apart. They should not be allowed to remain in the seed-bed more than two years. If strong plants are required, they should be transplanted into rows and allowed to remain one or two years, as may be necessary, according to the purpose required. For moorland they may be taken direct from a two-year-old seed-bed, but for more open and exposed situations they should be taken from lines of two years' standing.

Price of young plants. They are sold from the seed-bed for transplanting into rows at from 3*s.* to 5*s.* per thousand, and from the lines at from 8*s.* to 10*s.* per thousand.

Methods of planting. While in nursery lines, they must be kept carefully hoed and free from weeds, and they will in two years reach from two feet to three feet in height. On moorland, when taken from a seed-bed, they are generally planted in the "notch." A man goes forward with a spade and makes a cut, lifting slightly with a second cut at right angles so that an opening is formed at the junction, a woman or child following with the young plant and inserting it in the opening. The man then treads it down, and passes on to the next. This is a cheap and speedy process. In more exposed situations, and for large plants, holeing must be resorted to, and if this is done a few weeks before planting, to ameliorate the soil, it will be found beneficial, except when planting recently drained clays, when the holeing and planting should follow each other immediately.

This process is conducted by a gang of men. The foreman goes forward marking with his spade, or, what is still better, a "beck" or mattock, the spot where the holes are required, the next set following and forking, and the next with spades to complete the holes. Before planting, the trees are laid out by the foreman, placing here and there a hardwood tree or ornamental pine, and the men following, plant and tread them in. It is necessary sometimes to cut and clear the grass and undergrowth, and great growth sometimes results from this course, but in very exposed situations the undergrowth often acts as a shelter, and may be safely left. The following year it will be wise to look over the plantations and fill up gaps, selecting strong plants for the purpose.

Fill up gaps.

Larch, if planted for timber purposes, should be four feet apart, if for hop-poles, three feet apart.

Distances.

The larch flourishes in almost all soils, except when the subsoil is wet, as already stated. When in low and damp situations it is subject to the attack of insects, the chief being the larch aphis, or bug—*Chermes laricis* : (See Manual of Injurious Insects, by E. A. Ormerod, p. 192.) Healthy plantations, open and exposed, seldom suffer from this pest. For those plantations attacked there is no remedy except by such acts as will serve to promote the more rapid growth of the trees. They suffer most after early frosts when the leaves or spines die, leaving little for the insect to feed upon, when it attacks vigorously the buds, and thus causes decay and death. If the attack takes place in the nursery it may be treated to some

Diseases of larch.

Chap. III. Sect. 2. *Cone-bearing Trees.*

extent, both with a view to prevention and remedy; but it is otherwise in the plantation. It is also subject to another disease called "rot." This often shows itself in plantations which have been planted on undrained land, or on ground from which trees have been recently removed. It is also caused by too close planting and subsequent overcrowding, from neglect of regular and judicious thinning. This form of disease produces a hollow stem, engendered by the decay of the tap root, and is consequently called by some "pumping," owing to the pipe-like form of the diseased tree. Another disease, common on poor lands, or lands unsuitable to a rapid development of wood, is *canker*. This shows itself in crowded plantations, but seldom on isolated trees of vigorous growth, possessed of a large surface of foliage.

This disease we have found prevalent on the poor chalk soils and in damp, low-lying bottoms. It is caused by the fungus, *Peziza Wilkommii*. The spores of this fungus are deposited on wounds and frost cracks, the mycelium penetrates the structure and causes disorganisation of the tissues. The growth of wood annually fails to cover this wounded surface, and by degrees a cavity is formed, from which exudes turpentine and watery matter, causing the black blotches so well known in our larch plantations. The fungus is a white cup with yellow centre, exceedingly minute, but still visible to the naked eye, and in extreme cases is found over the whole tree or trees of a plantation. It is a parasitic fungus, and attacks young bark only, so that it is young plantations which are subject to its ravages. Although the spores will germinate on healthy trees, they seem to thrive best on those weakened by overcrowding or when attacked by the larch aphis.

We have known trees after thinning gradually recover from this disease, but when felled years after the timber has been found faulty and untrustworthy.

The correct course for the forester to pursue is to prevent the attack by judicious management in the early stages of growth; but, should it occur, he should immediately commence a judicious thinning to give more light and air.

Thinning.

The plantations should be judiciously thinned, but this will hardly be required for ten years, except in soils where an unusnal growth is obtained, and this only when close planting is resorted to. When four feet apart, a longer period may elapse before the woodman's axe is heard within the limits of the plantations.

Thinning of plantations.

When thinning, the decayed, injured, or ill-grown trees should be removed, leaving those of good growth for timber. The lower branches of those left should be broken off with the back of the axe or billhook, or a stick; by no means cut them if it can be avoided. When the trees are felled they must be dragged out to the nearest ride or roadway, and there trimmed, the trimmings being tied into fagots for brick-burning or other purposes, or burnt on the spot, the poles being laid in lengths for hop-poles or for whatever purpose they may be required. Larch hop-poles are still valuable; we have obtained in the wood 20*s.* per hundred for mixed poles from 12 to 16 feet long. Although there is still a demand for hop-poles, the new plan of growing the hops on string has raised a demand for poles of larger size as standards for the permanent wire net work. The expense of such thinning may be covered by the fagots, provided they can be sold for four shillings or five shillings per hundred.

After this first thinning they may be left for another term of ten years or so; they may then be sold at prices ranging from 4*l.* to 7*l.* per hundred trees; and in twenty to thirty years they may attain in good soil to timber size, and sell for 1*s.* per cubic foot. In this condition they become valuable timber; none perhaps more universally valuable is grown in Great Britain. For estate purposes it is almost necessary, and for the economical working of an estate it is unsurpassed. It is used for all kinds of roofing timber, beams and king-posts, for rafters, plates, battens, puncheons, boards, joists, posts and rails, gates, and other

Uses.

purposes too numerous to mention. It is easily converted, and may be used seasoned or unseasoned. Its bark is also used in some districts for tanning, but it is bulky, contains but little tannic acid, and is sold for about half the price of oak bark. Venice turpentine is extracted from it, and becomes, on the Continent, an export of some importance. For this purpose a full-grown tree is selected, and pierced to the centre with an auger, a tube is placed in the hole, and the turpentine collected in troughs, the only preparation needed being straining through a hair-cloth. Seven or eight pounds yearly is considered a fair yield, and this will continue sometimes for fifty years. The run takes place from May to September. After this, of course, the timber bears no value.

Venice turpentine, and method of collecting.

Yield of turpentine.

Larch as a reclaimer.

The larch also bears a value as a reclaimer of waste lands; the deposit formed by the fall of spines is exceedingly rich, and, when exposed to atmospheric influence, becomes a most fruitful soil. Land comparatively useless when planted, will, after the lapse of years, when the trees have been removed, bear a high agricultural value. It has been estimated that some of the poor land in Hampshire, planted many years ago with larch, has yielded an average annual return from date of planting three times the amount of its original rental value, and this after making fair allowance for labour and planting, compound interest on capital, and cost of final realisation.

Planting of larch has, in fact, become a matter of national importance; and those landlords who plant large areas of poor land with larch and other fir confer not only an early benefit upon themselves, but upon their successors, and upon their country generally.

Weight of Larch, in the round state, 30 to 33 cubic feet = 1 ton.
Price of Larch 10*d.* to 1*s.* per cubic foot.

Scotch fir.

SCOTCH FIR (*Pinus sylvestris*).—This genus is perhaps the most valuable of all ligneous plants, and includes many species. Like the larch it belongs to the coniferæ. It is a native of Europe, Asia, and America, and is valuable for its timber and resin-producing qualities. But the only one of the genus which it is necessary to consider fully is the well-known Scotch fir (*Pinus sylvestris*), that being the only species grown largely in Great Britain.

Its habitat.

We find this species throughout the kingdom, mostly in high situations and on soils of a poor character. It delights in poor sandy soil, but will thrive well in rich land if high and dry. As a shelter, under these circumstances, there is no more useful tree, its growth being rapid and formal. As it advances in age the lower branches die away, leaving a bare but picturesque stem of a rich sienna colour, contrasting very beautifully with its blue green foliage. Where the birch grows, naturally, the Scotch fir seems to thrive, and this may be borne in mind when arranging plantations on waste lands.

Treatment.

The treatment is similar in almost all respects to the larch, and it is planted under very much the same circumstances. Acres, however, are often planted from ignorance of the surpassing value of the latter. The larch is valuable from its first thinning until attaining maturity. The Scotch fir is valuable only when maturity is arrived at. It is monœcious, and flowers in May and June, but does not ripen its cones the same year. To separate the seed, the same process is resorted to as described already with reference to larch, with the exception that greater heat is required for the first few hours. When the cones have been collected immediately on becoming ripe, a heat of 110° Fahr. may be applied; when, however, they have been exposed to the heat of the sun, a temperature of 100° Fahr. will be sufficient. It is well to lay some boards on the floor of the kiln about one inch apart, so that the seed escaping when the cones are turned may be collected. They should be allowed to cool before being turned, the heat being again applied for a few hours, when they may be finally turned and sifted. The seed should then be

Preparation of the seed.

Sowing the seed and treatment of plants.

soaked for a while in water to separate the husk. It should be sown in April. The seed-bed should be light and sandy, and the seed covered about a quarter or half an inch with fine mould and protected from birds. Weeding and thinning must, of course, be attended to, and those that are thinned out may be placed in nursery lines. They will be fit for use according to the situations for which they are required, either as two years' seedlings or two-year-old seedlings which have been once or twice transplanted, and they will range in price from 3*s*. 6*d*. to 12*s*. per 1000.

The best plan is for the forester to purchase his seedlings from a well-known nurseryman, and to plant them in lines in his nursery. By frequent transplanting he can so develop the root fibre as to fit them for planting out when of considerable size.

Selection of seed.

It is highly necessary to secure seed from districts where the tree is known to attain a healthy growth. That obtained from Highland forests is the best. Individual trees also vary much in quality, even where growing close together; some being red and hard, and others white and soft; if, therefore, cones from the former can be collected, the opportunity should not be neglected. The careful selection of seeds is the more necessary from the natural inclination of this class of tree to degenerate.

Uses

The use to which the timber is applied varies, of course, in accordance with its age. When young it bears but little value, being liable to early decay. It is used, however, for pit-props, paling, staves, and laths. As timber it is used as deals for boarding and ordinary carpenter's work, and its price in the round may be estimated at from 4*d*. to 6*d*. per cubic foot. These remarks do not, of course, apply to certain districts where the tree reaches great dimensions, as under these circumstances a much higher value will be obtained. Such exceptional size is only obtained, however, in a few high situations in the Highlands of Scotland, and on northern slopes.

Price.

It may be remarked that this is the only species of the pine tribe indigenous to Great Britain.

Weight of Scots Pine, in the rough state, 30 to 33 cubic feet = 1 ton.

There are many other species of the pine grown in this country, but chiefly for ornamental purposes. Amongst them may be mentioned the following: *Pinus pinaster,* Cluster pine; *P. Austriaca,* Austrian pine; *P. Strobus,* Weymouth pine; *P. insignis,* the remarkable pine.

It is not necessary to write fully upon these species, nor to treat them individually. Though they differ materially in appearance, in habit, and in general character, their propagation and after treatment is very similar; with perhaps this exception, that, except the Austrian pine, they all require to be raised in a frame. It is, however, best to purchase all these varieties from nurserymen who make it their business to raise them; and to encourage root-fibre, and fit them for the new situation in the home nursery.

As ornamental trees this *genus,* perhaps, possesses a greater number of favourite varieties than any other. It has become a habit to call exotic varieties ornamental, and the phrase is often misapplied; for our well-known species are often the most beautiful. Whether they are ornamental or not depends upon their luxuriant growth. Too often they are miserable specimens of noble trees, from ignorance of their habits and requirements, and from neglect.

It will suffice here to say that, to obtain beautiful specimens, care must be taken to select well-grown and perfect trees, with a large quantity of root-fibre; to suit the trees to the soil; and to plant with great care in carefully prepared mould. Also to sufficiently protect by shelter without smothering; for it must not be forgotten that lateral branches are essential both for beauty and development of wood.

Pinaster.

The only two which we shall specially refer to are the pinaster and the Austrian pines. The former should be selected when sandy and exposed tracts are to be planted, not with a view to future timber, but as a shelter for other more useful varieties. It thrives in loose sandy soil, and loves air and light. It throws down a long tap root, and the lateral roots throw down also along their course a series of tap roots, thereby forming a kind of natural claw, which not only enables them to cling tenaciously to the sand, but to derive nourishment and moisture from the subsoil. This tree has been largely planted in the "Landes" of Western France with most successful results. In addition to its timber-producing qualities, it yields a large quantity of turpentine, and the method of collection may be seen in the Museum (No. III.) at Kew.

Austrian pine.

The Austrian pine is, perhaps, more useful than the pinaster, for it is catholic in its tastes, very umbrageous even in old age, very dense and massive. It grows rapidly in sandy soil, and soon makes a most complete shelter. There is no pine better fitted for protecting young plantations. It is best to plant well-grown trees five feet apart, and to alternate the rows. By this means a complete protection is afforded in the most exposed sites. In passing we may mention the Weymouth pine as suitable for timber purposes in sheltered and moist situations.

Weymouth pine.

Specific character of the pine tribe.

It may interest students to know that all the pines have needle-like leaves in sheathes of two, three, or five, and cones with persistent scales. In endeavouring to identify specimens these characteristics must be noted.

Common spruce.

The COMMON OR NORWAY SPRUCE (*Picea excelsa*).—There are several species of the genus to which the common or Norway spruce belongs, but it is the only one which we need specially consider.

Its habitat.

It is a native of Northern Europe, also of Asia and America. It is not indigenous to Great Britain, but was introduced, it is supposed, about the fifteenth century, the exact period is, however, unknown. Although it grows in high and exposed situations, it reaches great size only in low moist bottoms. It is the most lofty tree in Europe, sometimes reaching a height of 150 or 170 feet. It blossoms in May and June and ripens its cones in the following autumn. The cones are pendent and persistent, and form a beautiful feature in the tree.

Preparation of seed. When ripe the seeds separate readily from the cone, no artificial heat being required.

Treatment of plants. The roots of this tree are very fibrous and ramify near the surface; it is therefore treated somewhat differently to other conifers. The young plants should be left two years in the seed-bed, and if not too thick may be even left three years before being transplanted into lines. But this treatment is scarcely suited to any other of the tribe.

For planting in moorland, two years' seedlings once transplanted are the best. By being transplanted they become hardier, but do not increase much in size.

When transplanted for use as above, they may be planted in rows nine or ten inches apart and three inches between the plants.

If they are to remain two years in the lines, they should be one foot apart and four inches between the plants.

Nurserymen sometimes plant closer, and remove every other line as time progresses.

For plantation purposes, two or three years' transplanted plants are best; *i.e.*, plants which have been taken up and replanted twice or three times. They are very fibrous and bear removal well.

Nursery soil. The spruce will not thrive in dry and exposed nurseries. They require in their early growth a soil with a large quantity of vegetable mould, deep and moist. The best of all is a peaty soil or chocolate loam.

Useful as nurses. Owing to their lower branches retaining foliage, they form an excellent shelter, and are therefore useful as nurses. They are, by their lateral development and retention of foliage, well adapted to cleaning the stems of deciduous trees, and the French recommend them in the case of beeches, where the soil suits them. It must be borne in mind that the spruce will grow on poor and exposed soil sufficiently for nursing purposes, although they will not reach full development under these conditions.

Pruning. If required for timber purposes, they should be planted close together, so that the lower branches may decay and fall off, as the spruce should never be pruned if it can be avoided. By this method the timber is obtained free from knots. Although the knife and saw should never be used when avoidable, it must be remembered that the branches are very tough, and even if rotten do not readily break off, so that they may have to be cut; if this is the case the cut should be close to the stem. The thinnings may be used for pit-props, and when further advanced for scaffold poles and sleepers; some of the best may be used for the masts of small vessels, and, when full growth is reached, for planks. The timber is soft and white and of fine grain. It does not, however, reach a high figure; when fully grown 4*d.* to 6*d.* per foot is the full value.

Uses.

Price.

Some magnificent specimens of this tree, and also of larch, Scotch, and silver fir, are to be seen in Windsor Park, near Virginia Water.

They grow slowly until they become fully established, when their growth is rapid, and on good moist soils they attain a great height and girth in a few years.

Burgundy pitch, and method of collecting.

From this tree is obtained the Burgundy pitch. This substance is the congealed sap, melted and clarified by boiling in water.

The tree should, where circumstances are favourable, take its place to some extent in all plantations and game covers; where, however, ornament is required, it should form the outside lines. It is seldom that it can be recommended as a timber tree, as the larch will grow under similar circumstances and come earlier to a profitable maturity.

It is best adapted to belts, park circles, and shrubberies, and as a shelter it is both massive and beautiful.

Amongst the species suitable for ornament are the *P. Canadensis,* hemlock spruce; *P. Albertiana,* Californian hemlock spruce; *P. alba,* white spruce; *P. nigra,* black spruce; *P. Menziesii,* Menzies' spruce fir; and *P. Smithiana,* the Himalayan spruce fir, and others.

Varieties.

It is unnecessary to say more than that these are all adapted to ornamental planting on soils suitable to their development.

Silver fir.

The COMMON SILVER FIR (*Abies pectinata*).—This is one of the most ornamental and useful of the coniferæ. It is a native of Europe, Asia, and America, and the northern parts of Africa. In the Black Forest and in the glens of Germany it attains great size.

It was introduced into England about the year 1600, and has now become a tree of some importance.

It is very similar, in many respects, to the spruce, but the foliage is darker and more lustrous or metallic; the cones, also, are erect, not pendent like the spruce. As the cones ripen the scales fall off and liberate the seed, therefore no such artificial process for liberating the seeds as has been described in the case of the larch and Scotch fir is required. Owing to this liberation of the seed, the silver fir is readily reproduced, and plantations can, by judicious management, be rendered perpetual.

Treatment of seed.

Natural reproduction.

When young it is the most tender of its class, owing chiefly to its early growth, and the young shoots being too tender to withstand the effects of late frosts. The best method of overcoming this natural defect is to dig under the nursery lines, thus severing the fibres and retarding growth.

Treatment of plants.

It grows best on rich, deep loams; and perhaps for such soils a better tree cannot be selected. For timber purposes it should be planted thickly, under which circumstances it grows straight and soon attains considerable girth, a greater girth than the branches would indicate.

Soil.

It is also useful in filling up gaps in plantations, as it grows freely in shade.

Planting under trees.

The seedlings are best transplanted into lines when they have been two years in the seed-bed. They should be left one year in the lines and then transplanted again, giving them more room. This practice makes them hardy and more fibrous-rooted, which latter adapts them for final planting.

Strasburg turpentine.

From this tree is obtained the well-known Strasburg turpentine, used for fine varnishes and artists' colours, the only turpentine, in fact, fitted for this purpose. It is obtained from the resinous exudations found under the outer skin or bark. On dry and unsuitable soils, and in a dry atmosphere, this tree will not thrive, but in its sickly and impoverished state yields a quantity of turpentine in blisters under the bark, and decays early.

Price.

The timber is white and soft, and when free from knots makes good planks, which may be used in the place of foreign deals. It fetches in the market from 4*d.* to 6*d.* per cubic foot.

Uses.

It is fit for indoor purposes only; and although it may be profitably used when it can be obtained without much labour, it seldom reaches a size which will enable it to compete with foreign deals. In deep and rich loams, however, it will attain to great dimensions, when it is useful and valuable.

Varieties.

There are many ornamental varieties, but it will be only necessary to name those which are best adapted to our lawns and pleasure grounds. These are: *Abies balsamea,* balm of Gilead silver fir; *A. amabilis,* lovely silver fir; *A. grandis,* the great Californian silver fir; *A. nobilis,* the noble silver fir; *A. Nordmanniana,* Nordmann's silver fir; *A. pinsapo,* Spanish silver fir; and others. These can be purchased from nurserymen at prices from 1*s.* to 7*s.* 6*d.* each, but should be personally selected whenever possible.

OTHER ORNAMENTAL CONIFERS.

Trees for ornamental planting.

It may be well to attach a list of those trees which may be selected for purely ornamental planting, other than those already described; not with the view of confining the selection, but to assist the beginner in making his choice. They must, of course, be selected to suit the soil and site, but they may, to a great extent, be grown artificially on naturally unsuitable soils. The following may be considered hardy and suitable for special cultivation:—The *Araucaria imbricata,* Chili pine; suitable for dry soils and elevated situations.

Various varieties of the *Biota,* or Chinese arbor vitæ; these form strong-growing and handsome shrubs.

The *Cedrus deodara,* or Indian cedar, will grow and thrive on most soils and situations. Good specimens with single leaders should be chosen.

The *Cryptomeria Japonica,* or Japan cedar, is an elegant tree for lawns, and grows freely in most soils. Great attention should be paid to the leader, as if lost the tree assumes a bushy form, which destroys its chief character.

The *Cupressinæ,* or cypress family, is a hardy race, and should be included in all ornamental plantings. They make good garden hedges, or very beautiful ornamental trees if well grown.

The *Thujas,* or arbor vitæ, are also useful and ornamental. The *Thuja gigantea* of Western America is perhaps the most beautiful tree of the kind grown, and in suitable situations attains to great size.

The *Libocedrus decurrens,* the white cedar of California, is a beautiful and hardy tree, and deserves a place in ornamental planting.

The golden varieties, too, are very beautiful.

The *Retinosporas,* or Japanese cypress, form pretty miniature trees in parks and on lawns where they are

Chap. III. Sect. 2. *Cone-bearing Trees.*

sheltered. One of the hardiest is perhaps the *Plumosa aurea.*

The *Sequoia gigantea,* or Wellingtonia, the mammoth tree of California, grows well and rapidly in this country. It should never be left out of ornamental plantings, but care should be taken to select trees which have been carefully prepared in the nursery, as we have found this tree slow in developing root-fibre.

The *Sequoia sempervirens,* or Californian Red Wood, is another beautiful and graceful tree, and may be grown under similar conditions.

There are, of course, many other varieties, especially amongst the pines, spruces, and firs, but it seems unnecessary to enumerate more.

The end and aim of all who plant for the purposes of ornament should be to secure the end in view. This can only be achieved by carrying out the following directions: To prepare the soil for the reception of the tree; to select a handsome and well-grown specimen, with an ample supply of root-fibre; to plant carefully, so as not to destroy the spongioles; to provide shelter, and to tend during growth.

The common practice is to plant a so-called ornamental tree, and to trust to its good nature to develop.

SECTION III.

Timber Measurement.*

MEASUREMENT OF STANDING TIMBER—MEASUREMENT OF SAWN TIMBER—SUMMARY OF RULES WITH EXAMPLES—INSTRUMENTS USED IN TIMBER MEASUREMENT—SLIDING RULE—ITS DESCRIPTION AND USE.

Timber Measurement with a view to Valuation and Ultimate Realisation.

Having now described the various kinds of timber and timber-like trees and their treatment, we must ask the student's attention to the very important subject of measurements, as, of course, correct knowledge of contents is absolutely necessary before setting a value upon timber with the view to its final realisation. To arrive at a quick perception of contents and value, the student will need experience and patience. He must cling closely to the set rules, doing nothing by guess work, but proceed methodically with tape and rule, until by degrees his eye acquires such a training as to enable him, by its aid alone, to compute with accuracy; even then, however, he cannot altogether set formal methods of measurement aside.

Measurement of Standing Timber.

Rule.—To ascertain the contents of round timber, take the girth in inches in the middle, divide it by four, and square the result. Multiply the product by length of tree in feet, and divide by 144, and the quotient is the contents in cubic feet. (See rule, page 161.)

The result can also be quickly and accurately obtained by use of the carpenter's rule, a description of which will be found hereafter.

Allowance for bark.

Where there is bark an allowance must be made, or a false quantity will be obtained. In oak, elm, and ash, the usual allowance is half to one and a half inches to every foot of quarter girth; thus, the total quarter girth being 24 inches, and the bark being thick, a deduction of two or three inches would be necessary, the quarter girth being taken at 21 or 22 inches.

---

* See also Appendix.

Measurement of standing timber.

When trees are measured standing the girth must be taken as high as can be reached, and an allowance made for fall, *i.e.*, the natural taper of the tree, which must, of course, be regulated by the regularity or irregularity of such taper. Where the tree tapers gradually, and where the height is considerable, six inches may be deducted from the total girth; or, 1 inch of quarter girth to every 6 to 8 feet in height is preferred by some measurers.

Method of ascertaining height of trees.

The height of standing trees may be judged by using a 20-foot rod, or by the rod made expressly for the purpose in sliding joints, or, when too high even for this, the simple instrument hereafter described may be used: (see *post*) The student, however, after a little practice, will generally succeed in forming a correct estimate without the use of this instrument. To arrive at accurate results each tree must be carefully measured, and nothing decided at random. Each tree should be marked when measured, or it may easily be measured by mistake a second time. This remark applies also to felled timber. Therefore a cross should be cut with a scribe, or a blaze made, or painted spot affixed upon each tree as soon as measured. As the measurements are taken, entry must be carefully made in a book ruled for the purpose, and the contents of each quickly reckoned on the sliding rule, or worked out after in the office. A book ruled as follows will be found well adapted to the purpose:—

No.	Description.	Length.	Quarter Girth.	Contents in feet.	Price per foot.	Value of tree
					s. *d.*	£ *s.* *d.*
1	Oak ...	25	17	50	2 0	5 0 0
2	Elm ...	40	25	170	0 8	5 13 4
3	Ash ...	15	14	20	1 6	1 10 0

A more elaborate book may be used, but in practice these entries are sufficient. It may be said that this takes no account of the limbs and small wood, or "lop and top." It is, however, found that as a rule the sale of this about covers the cost of felling, and the timber being valued at the price when felled, the required result is arrived at by leaving its value out of the calculation. When oaks, however, are measured standing, it is necessary, as before stated, to take account of the bark, and for the value of that a sum must be added. This sum must be calculated according to circumstances: where oaks grow together in copses the bark is thin, but at the same time more valuable from the fact of its possessing more tannin, or, in a woodman's phrase "more virtue," than oaks of the same size growing in the open. The bark in the latter case is thick and woody, and requires dressing before a full price can be obtained for it; by dressing is meant the paring off the outside of the bark, which is valueless for tanning purposes. Experience only can enable a valuer easily to estimate the value of the bark on the trees which he is valuing. But the student may perhaps be assisted if we repeat the observations made when speaking of the oak tree, namely, that about one ton of bark may fairly be expected from every three or four tons of oak timber, and that 25 cubic feet of rough oak weighs about one ton. For further information on this point see Mr. Watney's paper in the Appendix.

Allowance and value of bark.

Dressing bark.

Where timber is felled for use on the estate, or for sale after felling, and when oak is stripped by the owner and the bark and timber sold, accurate results are of course obtained, but selling timber standing is a very general custom, and here it is that skill and care are required to ascertain the correct quantities and values. This subject, however, will be further treated of under "Auctions and Sales."

Irish method of sale.

The method of sale in Ireland is usually by the ton, the weight being obtained direct from the weigh-bridge, or, if this is impracticable, by measurement. Two prices are usually quoted, one for the stem and one for the limbs to 4 inch diameter. It must be borne in mind that under this method the whole contents of the tree is weighed.

MEASUREMENT OF SAWN TIMBER.

Sawn timber.

It is highly necessary that the student should know how to measure sawn timber. A great deal of practice is required to measure correctly after a sawyer, and as sawing is usually done by the "piece," it is important that the account of work given should be duly checked. In sawn timber the superficial foot, not cubic foot, is to be considered; for sale the superficial foot is reckoned at one inch thick—*e.g.*, a load of sawn timber equals 600 superficial feet one inch thick—or suppose an oak plank to be three inches thick, the area of the plank would be multiplied by three to arrive at the correct contents. Half inch plank, or any measurement below an inch, counts with reference to cost of sawing as one-inch, as the labour is, of course, as great.

Pit sawing.—Plank, board, joists, quartering, &c., are terms used to denote the character of converted timber for building and other purposes.

Cost of pit sawing.

The terms "plank" and "board" differ from one another only as regards thickness, planks being, in fact, thick boards. The cost of sawing varies from 5*s.* to 7*s.* per hundred superficial feet. It will be readily understood that a sawyer can saw a log into boards at a lower rate than into planks, because the hewing and marking of the log is less frequent in the one than the other. In the sawing of soft wood the cost of sawing will be less, say, from 3*s.* 6*d.* to 5*s.*

The terms joists, quartering, plate, gate posts, beams, &c., explain themselves. *Scantling* is a term used to imply breadth and thickness, and generally applies to the foregoing. The cost of sawing such is usually 3*s.* 6*d.* per hundred superficial feet.

Cost of steam sawing.

Steam sawing.—When sawing by steam is resorted to, the estate finds engine-driver, coal, &c. The sawyers are paid as follows: Rails, about 4*s.* 2*d.*, and stumps 2*s.* 1*d.*, per hundred in number; boards, 1*s.* per hundred superficial feet.

The quantity of coal consumed is very slight. If oak is being sawn, the refuse will keep up steam; if larch or beech, a small amount of coal will be required in addition.

Measurement of slabs and planks.

Planks are generally cut into fixed lengths, which, of course, necessitates only the measurement of the width in the middle, or each end if tapering, and then by a rapid calculation on the rule the superficial contents is arrived at, and chalked on the plank, and the plank set up for seasoning.

Where the planks or slabs are less on one side than the other, *i.e.*, where the bark or rind adheres, it is to be measured on the lesser side.

Rule.—Multiply the mean breadth in inches by the length in feet, divide the product by 12, and the result will be the superficial contents.

Rule.

By the Sliding Rule.—As 12 upon B is to the breadth in inches upon A, so is the length in feet upon B to the contents upon A in feet and fractional parts.

SUMMARY OF RULES WITH EXAMPLES.

1. To ascertain cubical contents of trees; *i.e.*, *saleable* contents.

Rule.—The quarter girth in inches squared multiplied by the length in feet, and divided by 144 = saleable contents.

This rule gives the contents less the sapwood, which is hewn before sawing.

2. To ascertain the true cubical contents.*

Rule.—Multiply the area of the circle of which the girth is the circumference in inches by the length in feet, and divide by 144 = exact contents.

---

* It must be borne in mind that we are treating this subject practically and not mathematically. Therefore we take the girth in the middle of the tree, and do not treat it as the frustrum of a cone.

Examples :

Saleable contents.

Rule 1.—Find the contents of a tree 25ft. long whose quarter girth is 16in.: $16^2 = 256$, $256 \times 25 = 6400$, $6400 \div 144 = 44·4$ cubic feet. Saleable contents of tree.

Exact contents.

Rule 2.—Find the contents of a tree 25ft. long whose total girth is 64in.: area (see Circles), 2·368; $2·368 + 25 = 54$ft. A correct but not practical result.

3. To ascertain the cubical contents of a tree by sliding rule.

By sliding rule.

Rule.—As the length upon C is to 12 upon D, so is the quarter girth in inches on D to contents upon C.

This latter is a quick and easy method, and generally resorted to by country timber measurers.

4. To ascertain the superficial contents of a plank or board.

Superficial measurement.

Rule.—The length in feet multiplied by the breadth in inches and divided by 12 = superficial area.

Decimals and duodecimals are rules useful for the above ; and are more fully described hereafter.

Examples :

Required the superficial contents of a plank whose length is 20ft. 6in. and breadth 1ft. 4in.

By fractions $20\frac{1}{2} \times 1\frac{1}{3} = \frac{41}{2} \times \frac{4}{3} = \frac{164}{6} = 27\frac{1}{3}$.

By Decimals.	*Duodecimals.*
20·5	20 6
1·33	1 4
·615	20 6
6·15	6 10 0
20·5	27 4 0
27·265	

5. To ascertain the superficial contents of a plank by sliding rule.

By sliding rule.

Rule.—As 12 upon B is to the breadth in inches upon A, so is the length in feet upon B to the contents upon A in feet and fractional parts.

INSTRUMENTS USED IN TIMBER MEASUREMENT.

Razing-knife.

Fig. 1. The razing-knife or *scribe.* This knife can be purchased for 2*s.* 6*d.* or 3*s.* at any ironmonger's. It is used for marking trees.

Needle.

Fig. 2 is the "needle" for assisting the measurer in girting the tree with string. When felled timber lies close upon the ground, it is often difficult to force the string under it. This simple instrument overcomes this entirely. It may be made by any blacksmith for 1*s.* 6*d.* (Note.) The two figures represent the same instrument from different views.

Girt-strap.

Fig. 3 is the "girt-strap" for girting standing timber. It is a strap about twelve feet long and half an inch wide, having at one end a loop for the hand, and at the other a weight. Standing close to the tree, the operator throws the weight round, which he catches, and thus girts the tree. It is necessary, however, to be careful, as the weight comes round with considerable force, and is apt to strike the operator's face rather unpleasantly. An old rein makes a good strap.

The strap is divided into inches, which are marked ¼, ½, ¾, 1, &c., each inch being reckoned a quarter, thus showing at a glance the quarter girth of the tree.

To find the height of a tree.

Fig. 4. To find the height of a tree, a simple instrument may be made by any village carpenter, as follows:

Take a square-sided staff of some light but tough wood, six feet in length, and divide it into feet for the sake of taking distances.

Upon this staff fix at convenient height an oblong piece of board (mahogany is best), eight inches long and four inches broad, and three-quarters of an inch thick (or any other size, provided the length is exactly double the breadth). At the corners A and B (see Fig. 4), fix two nails or brass pins, allowing them to project from the board. At C and D fix two more, making A B equal to

A C and C D. At X fix an eyelet to admit of the suspension of a plummet. Let the staff be pointed and shod with iron, that it may be fixed readily into the ground.

The instrument is then complete, and is used as follows:

Keep the dial face edge-ways, so that the points A, C, D, are towards the tree, and the point B towards the observer. Then fix the staff in the ground perpendicularly by aid of the plummet, at such a place that by looking across B C you can see the top of the tree. The height of the tree will then be equal to the distance of the staff from the base of the tree plus the height from the ground to the measurer's eye.

If it is more convenient, owing to underwood or other obstruction, to place the staff nearer the tree, fix the staff at such a place that, acting as before described, by looking across the sights B D you see the top of the tree. The height of the tree will then be equal to double the distance, plus the height from the ground to the eye.

With the addition of a carpenter's rule, book and pencil, and a piece of string twelve feet long, the measurer is equipped.

SLIDING RULE—ITS DESCRIPTION AND USE.

Sliding rule.

Although it is not easy to make this instrument intelligible by mere written description, the following quotation from Nesbit's Mensuration will probably enable the student to understand and apply it so soon as he has it actually in his hands.

"This instrument is commonly called 'Cogeshall's Sliding Rule,' and is much used in measuring timber and artificer's work—not only in taking the dimensions, but also in casting up the contents.

"It consists of two pieces of box, each one foot in length, connected together by a folding joint. One side or face of the rule is divided into inches, and half-quarters or eighths; and on the same face there are also several

CHAP. III.
Sect. 3.
Timber Measurement.

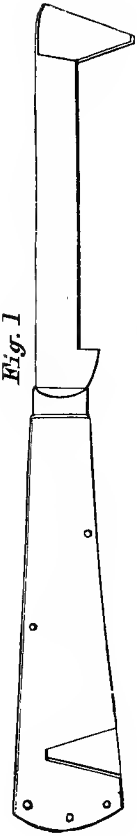


Fig. 1

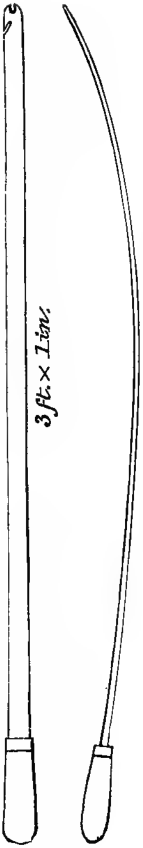


Fig. 2

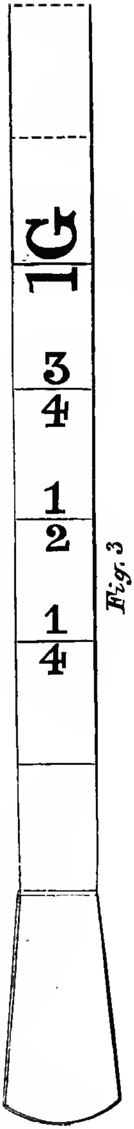


Fig. 3

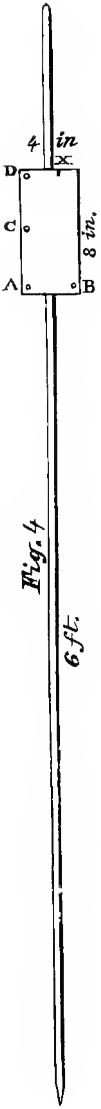


Fig. 4

plane scales, divided into twelfth parts, which are designed for planning such dimensions as are taken in feet and inches. On one part of the other face are four lines marked A, B, C, D, the two middle ones (B and C) being upon a slider.

"Three of these lines—viz., A, B, C—are exactly alike, and are called double lines, because they proceed from 1 to 10 twice over. The fourth line, D, is a single one, proceeding from 4 to 40, and is called the "girt line." The use of the double lines A and B is for working proportions and finding the areas of plane figures, and the use of the girt line, D, and the other double line, C, for finding the contents of solids.

"When 1 at the beginning of any line is accounted 1, then the 1 in the middle will be 10, and the 10 at the end 100, and when 1 at the end is accounted 10, then the one in the middle is 100, and the 10 at the end 1000, &c., and all the smaller divisions are altered in value accordingly. Upon the girt-line are also marked W G at 17·15 and A G at 18·95, the wine and ale-gauge points, to make the instrument serve the purpose of a gauging rule. On the other part of this face there is commonly either a table of the value of a load or fifty cubic feet of timber, at all prices from 6*d.* to 24*d.* per foot, or else several plane scales divided into twelfth parts, and marked 1, $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$, signifying that the 1-inch, $\frac{3}{4}$-inch, &c., are each divided into twelve equal parts.

"The edge of the rule is generally divided decimally or into tenths, namely, each foot into ten equal parts, and each of those into ten other equal parts. By this scale dimensions may be taken in feet, tenths and hundredths of a foot, which is a very commodious method of taking dimensions, when the contents are to be cast up decimally."

SECTION IV.

SALE OF TIMBER.

SALE BY PUBLIC AUCTION — BILL OF EXCHANGE — SALE BY TENDER—PRIVATE SALE.

REALISATION OF TIMBER.

THREE methods of Sale present themselves to the land agent, from which he must select in accordance with the custom of the district, his own views, or the requirements of the estate. The first, and perhaps that most resorted to, is:—

SALE BY PUBLIC AUCTION.

Sale by auction.

After having decided what timber is for sale, he will choose an auctioneer known for his business qualities and integrity, and arrange with him place of sale, date, and hour, and also give him the quantity and description of timber for sale, in order that he may insert proper advertisements in the local and other suitable newspapers.

Method of lotting timber for sale.

Having done this, he will either authorise the auctioneer or employ his own woodman to mark and number in paint the various lots of timber. This is done by scraping off the moss, and, with a paint brush, making a bold number in white or red paint; each tree being marked on the same side, so that, by walking through the wood in one direction, the marks readily catch the eye. It is, however, a good plan when thinning, in addition to the number, to paint a ring round the entire stem, so that it can be seen from all directions.

Valuations of lots.

The next process will be to go with the woodman and measure and value each lot (in accordance with the foregoing rules), entering the same carefully in a memorandum book. At the time of sale these values will be given to the auctioneer as the "upset" or reserved price.

At the time of sale the auctioneer will then be in possession of the number of trees of each kind, the woods in which they stand or lie, and the proximity of roads; he will also have prepared conditions of sale, drawn up in accordance with the views of the agent, such rules embodying strict conditions as to payments, and fulfilment of certain obligations. The sale will then proceed. If the timber is good and useful, if the advertisements and post-bills have been widely and wisely circulated, and if the auctioneer is known, there is every prospect of success.

Publicity of auctions.

It is very necessary that the sale should be extensively known, as when local merchants only are present, it is a very common practice to combine and keep down the prices; when, however, buyers come from a distance this is almost impossible.

An auctioneer's form of conditions and the usual memorandum of agreement are annexed, which will serve as a guide, and help to make clear the foregoing remarks.

Auctioneer's duties.

The auctioneer, after the sale, will collect the money in accordance with the conditions (the conditions having been read aloud previous to the sale). Within a week or so he will forward to the agent a statement of accounts, showing the expenses connected with the sale—printing bills and catalogues, posting bills, marking and lotting, "expenses out of pocket," and commission; the latter depending upon circumstances, but it will vary from 2½ to 5 per cent. upon the gross sum obtained. The balance, after these deductions are made, he will cover by a cheque, and at the same time he will inclose a list of the purchasers, their names and addresses, with the respective balances, due from them. The agent will then proceed to draw upon each in the usual way, which will be hereafter more fully described.

When auction is not advisable.

The plan of auction is generally strongly to be recommended. It brings what is highly necessary, viz., competition, and as a rule gives general satisfaction. The practice, however, is not desirable in the case of small sales. When the sum expected is less than 200*l*., it is scarcely advisable.

Lotting.

When trees are standing, lots of twenty will be found a useful number; when scattered, the lots may consist of fewer, and sometimes even of single trees. When felled they may, of course, be collected and drawn into lots and into suitable situations, and when this can be done it will be wise to select with judgment, so that each lot may be valuable for special purposes.

All trees should be cleaned to their full length, and not cross-cut. The purchaser can then saw them to suit his own purpose.

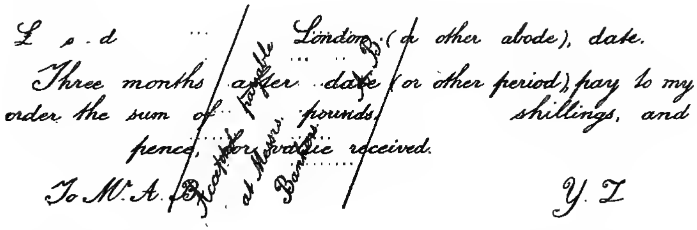
Settlement after purchase.

In settlement it is sometimes wise to allow a discount for cash payments, *i.e.*, for the balances due after payment of the stipulated deposit. Five per cent. discount will almost invariably induce cash payments when the purchaser is sound, but 2½ per cent. will seldom do so. The allowance, however, of 5 per cent is a matter of importance in a pecuniary point of view, and it is doubtful policy to take it from a thoroughly trustworthy man (and on this account provided for in condition 4).

Bills, though often absolutely necessary, should be, where possible, discountenanced.

Form of bill.

Where necessary to resort to the practice, the form is as follows:—



£ s. d ... *London (or other abode), date.*

Three months after date (or other period) pay to my order the sum of ... pounds, ... shillings, and ... pence, for value received.

To Mr. A. B. *Y. Z.*

Accepted payable at Messrs. ... Bankers ... B.

This form, filled up with the amount due, must be forwarded to A.B., the party upon whom it is drawn, with a request that he will accept it and return it at once. In

Chap. III. Sect. 4. *Sale of Timber.*

the event of his sole acceptance being considered satisfactory no further step is required; if, however, there are doubts existing as to his ability to meet his engagement, he must be requested to furnish another signature to the bill, the party attaching such signature being responsible in the event of the failure of the drawee.

The acceptance must be written across the bill (as above) and should be made payable at a banker's. This bill is then either kept by Y. Z. the drawer (in this case the agent) until it becomes due, or deposited with his bankers for collection at maturity; or he may, if he desires it, discount it at the current rate of interest. The act, however, of discounting does not remove from the drawer any responsibility in the event of the bankers becoming losers by the failure of the drawee.

The bill being made to "order" will require the signature of the drawer on the back, previously to payment.

It must be written on paper stamped according to the amount for which it is drawn, the stamp duties being as follows:

Bill stamps.

BILLS OF EXCHANGE, ON DEMAND 1*d*.

Bill of any other kind (except a bank note), and promissory note of any kind whatsoever (except a bank note), drawn or expressed to be payable, or actually paid or indorsed, or in any manner negotiated in the United Kingdom, or purporting to be drawn or made out of the United Kingdom, though actually drawn or made within it.

		£	£	*s.*	*d.*
Any sum not exceeding		5	0	0	1
Above £5	„	10	0	0	2
„ 10	„	25	0	0	3
„ 25	„	50	0	0	6
„ 50	„	75	0	0	9
„ 75	„	100	0	1	0

And for every £100 or fraction thereof, 1*s*.

Rules necessary to secure success.

In conclusion, it may be observed that, in order to insure the sucess of a sale by auction, the following requirements are necessary:—The selection of a trustworthy auctioneer, wide distribution of notices of sale, comprehensive rules and conditions, and the retainment of power over the timber until payment is made or secured.

Chap. III. Sect. 4. *Sale of Timber.*

CONDITIONS OF SALE.

Conditions of sale.

1. The highest bidder to be the purchaser on being declared such by the auctioneer, whose decision shall be final.

2. No person shall advance less than 1*l.* at each bidding, nor retract his bidding.

3. The sale is subject to a reserved bidding for each lot, which will be made by the owner's agent if necessary.

4. Each purchaser, at the time and place of sale, shall subscribe his name and address (on request) to these particulars, and sign an agreement for the due performance of these conditions. Each purchaser shall, immediately after the sale (or on the fall of the hammer, if requested), pay into the hands of the auctioneer 25*l.* per cent. on the amount of purchase money, and shall, within fourteen days from the day of sale, make and deliver, at his own expense, to the vendor's agent, security to be approved by him for the remainder of the purchase money by an acceptance, payable at a banker's three months after the date of the sale, and shall find also sufficient surety or sureties for payment of the same; or in default of giving such approved acceptance or finding such securities the deposit money shall be forfeited to the vendor, who shall thereupon be entitled to the timber and produce thereof, sold to such purchaser, for his own use and benefit, as if no such sale had taken place, nor shall the purchaser be allowed to enter on the premises to remove any part of the said timber or tree or produce thereof. Should any purchaser pay the whole of his purchase money at the time of sale, a discount of ——— per cent. on the value, after deducting the deposit as above, will be allowed.

5. If any person shall purchase more than one lot, the lots so purchased by him shall, for the purpose of the fourth condition, be considered as one lot; and the total amount of the purchase money for such lots shall be subject to the same deposit and securities accordingly.

6. If any purchaser shall neglect or fail to pay his purchase money as aforesaid, or shall become bankrupt or insolvent, the vendor or his agent shall be at liberty to secure and prevent the removal of any of the timber, or produce thereof, purchased by such purchaser that shall be remaining on the said manor, and shall be at liberty to sell or dispose of the same, and apply the money arising from the sale thereof towards paying the purchase money of such purchaser,

or such part thereof as shall be unpaid, and after deducting all charges of converting and selling the said timber, or produce thereof, shall render the overplus (if any) to such purchaser, or to the person or persons legally claiming under him, but such taking possession or sale shall not discharge such purchaser or his surety or sureties from their respective liability upon any acceptance then unpaid, or any bond or other security, further than to the extent of the net proceeds of such sale.

7. The trees shall be removed and taken off the said premises at the purchaser's expense, on or before the 1st day of , 190 . And such timber or produce of such timber which shall be remaining after the 1st said day of shall be forfeited to the vendor, who may take the same to his own use, without making any satisfaction to the said purchaser.

8. The respective purchasers shall use all possible caution to prevent damage to the adjacent hedges, fences, gates, posts, and rails, and shall, with their horses, teams, carriages, servants, and workmen, keep the accustomed roads to and from the woods, or such other tracks and ways as shall be pointed out by the vendor or his agents, and shall not nor will take any dogs or guns into the woods, plantations, or fields of or belonging to the said manor. All injury or negligent damage arising from the breach of this or any other condition, either by their purchasers, or their respective agents, workmen or labourers, horses and cattle, as aforesaid, shall be forthwith made good and paid by the purchaser thereof, and the amount of such injury or damage shall be settled by the vendor's agent, and be thereupon recovered by the vendor as liquidated damage.

9. If any dispute shall arise as to the identity or number of trees or saplings comprised in any lot, such dispute shall be decided by the vendor's agent, and no mistake, error, or misdescription whatsoever in the particulars of sale shall vacate or vitiate the sale of several lots or any of them, and no compensation or allowance shall be made, paid, or allowed by the vendor or purchasers respectively in respect of such mistake, error, or misdescription, unless the same be declared or pointed out at the time of the sale, or before signing these conditions.

AGREEMENT.

Agreement.

I, of , do hereby acknowledge that I have this day purchased by public auction, Lot of the timber mentioned in the annexed particulars, for the sum of £ and have paid the sum of £ as a deposit, and in part payment of the said purchase money, and I do hereby agree to pay the remaining part of the said purchase money at the time and place within appointed, and in all other respects on my part to fulfil the within-mentioned conditions.

Chap. III. Sect. 4. *Sale of Timber.*

Dated the day of 190 .

Witness my hand

Here attach a 6*d*. Agreement Stamp.

Purchase money	...	£
Deposit money	...	£
Balance due ...	...	£

As Agent for the Vendor, I hereby confirm the same, and acknowledge the said sum of £ to have been paid to me on account of the above purchase money.

Sale by Tender.

Sale by tender.

Before resorting to this plan it will be necessary to arrive at the real value of the timber for sale, in order that the tenders received may be fully considered. There will probably be a great divergence in the amount of the various tenders; but this is only to be expected when values are decided by parties wanting the timber for various purposes, and unprompted by the knowledge of competition.

Method of selling by tender.

The method of procedure is as follows:—An advertisement is drawn up somewhat as follows, and inserted in the various local and other papers likely to come under the notice of timber merchants.

Forms of tender.

"*To Timber Merchants and Others.*—Tenders are invited for the purchase of oak (or other) timber growing (or lying) upon the estate. To view, and for full particulars, apply to Mr. , woodman of the estate. Tenders to be delivered by the day of , 190 , and addressed to Mr. , agent (address). No pledge is given to accept the highest or any tender," or,

"Tenders are invited for the purchase of timber growing (or lying) upon the estate, in accordance with the following particulars: Tenders to be sealed and marked 'Tenders for Timber,' and delivered by the 6th day of

Chap. III. Sect. 4. *Sale of Timber.*

December (or other date). No pledge is given to accept the highest or any tender. To view apply to the woodman, estate. Tenders to be addressed to A. B. C., agent, Estate Office (address)."

Name of Wood.	Oak.	Ash	Beech.	Elm.
Great Wood ...	6	12	...	
High Wood ...	10	3	6	
Church Lane ...				5

This practice is approved of by many. It possesses the advantage of simplicity, and also saves considerable trouble and expense. It fails, however, to produce the necessary competition which can alone secure high figures.

The intending purchasers are also somewhat restricted in their offers by the feeling that they may possibly, to secure the purchase, overreach themselves. They are, to a certain extent, working in the dark, and lose that very necessary element acquired in public auctions of rapid calculation and decision. That buyers are influenced in this way there is no doubt; for we have known the amount of tenders vary to such an extraordinary extent that it has been scarcely possible to believe that they have been based upon the same lots of timber, or that they have emanated at all from practical men.

In the event of this practice being determined upon, however, the conditions as to payments, and conversion of the timber, will be similar to that already described in the foregoing pages.

Private Sale.

Private sale.

For small lots, this is, perhaps, the wisest course, but for large lots the most unwise. But it is to be observed that there are those who are always looking out for bargains, and ready to take advantage of the unwary or inexperienced; and accordingly a private sale is scarcely likely to be satisfactory except where it is made by a man of considerable experience.

It is necessary in this method to measure and value with great accuracy, more so than under the two former plans of sale: this, however, must be evident, as upon the estimate only the agent must make his bargain.

Often on estates there are small lots of timber not required for home use, which may be sold in this way, and which will bring in small sums of money for ordinary outgoings.

In most districts there are men who can better afford to buy small than large lots, and are willing to pay a trifle over the ordinary value rather than lose this advantage. In cases of this sort private sale is useful, and may be safely resorted to; but, for larger sales, we are of opinion that the practice is most unwise, and should in every case be discountenanced. It is to be remembered that 1*d.* a foot represents a considerable sum when large quantities of timber are in question.

CHAPTER IV.

UNDERWOOD AND ITS MANAGEMENT.

SECTION I.

UNDERWOOD.

UNDERWOOD AS A SOURCE OF INCOME—SALE OF UNDERWOOD—CUTTING AND SORTING UNDERWOOD—TIME FOR CUTTING—UNDERWOOD IN THE HANDS OF A TENANT—THE PLANTING AND PROTECTION OF UNDERWOOD—TABLES FOR CALCULATING NUMBER OF PLANTS REQUIRED FOR PLANTING DIFFERENT AREAS.

Underwood as a source of income.

BY underwood is meant coppice, which is growth from stools or stumps. This growth, as a rule, forms an important item in the annual receipts of most estates in the South of England, and the duty of the forester is to see that the acreage is so arranged that the same quantity comes to cut each year. For instance, supposing we have upon an estate 100 acres of coppice, and the soil is such as will bring the wood to maturity in eight years, we divide the acreage by eight, which gives 12½ acres as the annual cut. This is highly important in estate management, as the yearly income should be, as nearly as possible, equal, in order that expenses may be regularly met; and also that the owner may know as nearly as possible what income he may expect. Upon rich estates underwood forms one of the most profitable sources of income, and deserves careful attention. The return is regular and the expenses low, as during the growth little labour is required beyond looking to the watercourses and ditches, and keeping down ground game; and, of course, the annual payment of rates, tithe rentcharge, taxes, and so forth. Under these circumstances a return considerably beyond agricultural value may be looked for. On soils, however, of poorer quality, the growth is less rapid, and the quality much inferior; a period of twelve years being often required before coming to "cut." It is highly important, where underwood is looked upon as the chief means of return, that timber should be thoroughly and carefully thinned, as no class of underwood will grow under spreading oaks or beeches. It is also of great importance that ground game should be kept down, as when hazel and ash are barked, or the young shoots nipped off, the value of the next cut is greatly affected. In hard winters, and when game is preserved, the damage done is often beyond calculation.*

Sale of underwood. Underwood, as a rule, is sold by auction, under rules very similar to that of timber: (see p. 170.) It is sold by the acre; the purchaser undertaking to cut and remove, without unreasonable injury to surrounding growth, within a certain period; also undertaking to cut clean and low, leaving all germs, saplings, and hollies (these, however, ought first of all to be marked in paint by the forester) as belonging to the estate. He also makes good all the fences adjoining the portion which falls to him from the growth in proximity, being allowed for the same at a fixed sum per rod on payment of his account. He is also in some cases called upon to leave rods, where the plant is thin, for future layering; and where this is done an allowance is made for every 100 rods so left. The parties purchasing are generally men who make it part of their calling; they consequently know to a nicety what use each stick is adapted to. When the work is completed, and the ground clear, the buyer and seller appoint a measurer, who measures off each piece, and it is upon this area that payment is

---

* The above remarks concerning underwood may remain unaltered; but the value of this class of produce has greatly fallen during the last five years. This is owing to manifold causes; but chiefly that of failure of demand.

CHAP. IV. Sect. 1. *Underwood.*

made; the sum per acre being of course fixed when the contract is made. The acreage of each cut is, however, after some years tolerably well known, and consequently a fixed sum may be arranged at the outset. The value of underwood much depends upon the number of ash and other poles which it contains; for these are looked upon as direct profit, whilst the hazel and other small stuff are expected to clear expenses unless the quality is very deficient.

Cutting and sorting underwood.

When the sale has been effected, the buyer agrees with a party of men to cut the stuff. This is done also by the acre; the price generally being from 12*s.* to 15*s.* They lay it in rows just as it comes. When the whole is felled they return to the place where they began and commence the process of *sorting.* A practised cutter knows in a moment what to do with each piece, and with his sharp billhook the work rapidly proceeds; hoppoles, hurdle rods, shores, withes for tying, rods for fencing, hoops, &c., being all sorted and made up by the dozen or quarter of a hundred, and the refuse tied into bavins and faggots. This is also done by task work.

Prices of task work.

The following prices of task work may be useful, though they will of course vary according to the rate of wages in the district wherein the coppice is situated:—

Faggots...	3*s.* to 5*s.* per 100.
Withes	3*d.* per 100.
Hurdle rods	4*d.* to 5*d.* per 100.
Stakes	1*d.* per doz.
Rick pegs	6*d.* per 100.
Lamb creeps...	6*d.* each.
Teazle poles	3*s.* per 100 (120).
Bean sticks	1*s.* ,, ,,
Spike rods	6*d.* ,, ,,
Poles	7*d.* per doz.
Hop poles	1*d.* per foot length per 100.
Shaving hop poles	6*d.* to 8*d.* per 100.

When this is all completed the men are paid and the buyer commences the act of realisation. One of his first acts in those districts where basket hurdles are made is to send in the hurdle-maker to make up the rods put aside for that purpose. This process is paid for by the dozen hurdles, the price paid being about 3*s.* to 3*s.* 3*d.*, a good maker turning out on an average twelve to fifteen hurdles per day. The price of these when sold is about 7*s.* to 8*s.* per dozen.

It will consequently be seen that the buyer of underwood must have some amount of capital to enable him to conduct his work. But credit is usually given by the seller. This is of course arranged at the time of sale, and the practice varies in different districts and on different estates.

Time for cutting.

It is very important that cutting should not commence until the sap ceases to circulate, as otherwise the stumps soon become injured. From November to March is the best time. There is also a period at which the growth falls off and rapidly decreases in value. It is therefore necessary to watch the exact period of maturity.

Underwood in the hands of a tenant.

Where underwood is let with the farms, the annual growths are of course the property of the tenant. Upon quitting, therefore, he is entitled to receive from the land-

Table of values.

	Years.	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Value per acre at maturity		6	0	0	5	10	0	5	0	0	4	10	0	4	0	0
Value per acre at the end of successive years after last cut.	1	0	7	2	0	6	7	0	6	0	0	5	4	0	4	8
	2	0	14	4	0	13	7	0	12	6	0	11	0	0	9	7
	3	1	2	8	1	1	0	0	19	0	0	17	0	0	15	6
	4	1	11	2	1	8	0	1	6	0	1	3	0	1	0	6
	5	2	2	0	1	17	0	1	13	0	1	9	6	1	6	6
	6	2	9	10	2	5	0	2	1	0	1	16	6	1	13	0
	7	2	19	10	2	15	0	2	10	0	2	4	0	1	19	6
	8	3	10	0	3	5	0	2	19	0	2	12	0	2	6	6
	9	4	1	0	3	15	0	3	8	0	3	0	0	2	14	0
	10	4	13	6	4	6	0	3	18	0	3	9	0	3	2	0
	11	5	6	0	4	18	0	4	10	0	3	19	0	3	11	0

lord or incomer a sum representing the value of such growth; this value is determined by valuers chosen in the ordinary way by each party, and, with men of experience, there is little difficulty in arriving at a fair sum. On the previous page we have appended for the use of the student a table which we have found of value, and which may act as a guide. Of course, the nearer the growth is to maturity the greater in proportion becomes the value; and as the table is framed on the assumption that the soil will only bring to maturity every twelve years, it will require modification in valuing on a soil where maturity is more rapid.

The planting and protection of underwood.

In preparing plantations of underwood, it is necessary to drain if the soil be at all wet; and open watercourses should be resorted to. These should be cut with sloping sides, as otherwise in winter the earth falls in and fills up the drain, causing flooding and consequent injury. Covered drains are useless owing to the fibrous roots. Trenching may be advisable, and pay in the long run, but it is too expensive to be generally resorted to. Good fences should also be erected, as the bite of sheep or cattle is injurious to the young plant. Roads should always be so arranged that the cuttings may be carted away with as little injury to the stools as possible. A cart-wheel will often cause the death of a well-developed stool. The subject of propagation will be treated of under the description of plants suitable for underwood; it should, however, be borne in mind that, in planting, variety is a matter to be kept in view; hazel forms generally the bulk, but it may be interspersed with ash, chestnut, &c. In all cases the plants chosen should be suitable to the soil and aspect, and as far as possible with the local demand. It is perhaps more profitable to keep the varieties separate, and not to mix them as is customary. For example—ash, chestnut, willow, and so forth, may be planted alone; by which means there will be regularity and uniformity of growth. Young plantations for converting ultimately into coppice should be nursed with larch,

Planting.

Distance of plants.

Scotch fir, silver, or spruce fir at distances to suit the soil; as these not only protect the young plants, but contribute to the expenses. When the young plants attain a size of three or four inches in diameter, they may be cut over, and adzed carefully over the top to prevent the water soaking in and destroying the stools. They will soon throw up healthy shoots which, if duly protected and cared for, will quickly become profitable. The distance apart should be about six feet, and the planting may take place any time between October and March. Where old plantations require filling up, the writer has found layering better than planting. This process is very simple. Layers, which should be well grown and developed rods, are left standing; then, when the ground is clear, these are cut at the base and bent over, and so laid where the bare place occurs; the end, being pointed, is stuck into the ground and the layer kept down with pegs and covered at the base where cut, and perhaps in one or two other places, with a sod. Growth soon takes place, and in a few years fresh stools will be formed. They should be laid as close to the ground as possible, as otherwise men and horses often trip over them. A cut on the under side of the layer will assist the development of roots. It is therefore a good plan to incise the bark with the hook, when layering, in two or three places. From these cuts fibres are thrown out and a separate stool is more rapidly formed. It is important to keep blank spaces always well layered or planted, and injured shoots cut down so as to promote fresh growths. In conclusion, no timber trees but oak should be allowed to be present, and these only to a limited extent. The oak roots strike deeply down, and consequently this tree only affects the growth of coppice by the shade which it produces.

Layering.

The following table shows the number of plants on an Imperial statute, a Scottish, and an Irish plantation acre, respectively, at various distances of the plants apart each way:

CHAP. IV.
Sect. 1.
Underwood.

Distance of plants apart.		Number of plants on an Imperial Statute acre of 4840 squara yards.	Number of plants on a Scottish acre of 6150 square yards.	Number of plants on an Irish plantation acre of 7840 square yards.
ft.	in.			
2	0	10-890	13,837	17,640
2	3	8604	10,933	13,938
2	6	6969	8856	11,289
2	9	5760	7315	9330
3	0	4840	6150	7840
3	3	4124	5240	6680
3	6	3555	4518	5760
3	9	3097	3936	5017
4	0	2722	3459	4410
4	3	2411	3064	3906
4	6	2151	2733	3484
4	9	1930	2453	3127
5	0	1662	2214	2822
5	3	1584	2008	2560
5	6	1440	1830	2332
5	9	1317	1674	2134
6	0	1210	1529	1960
6	3	1115	1417	1806
6	6	1031	1310	1670
6	9	956	1214	1548
7	0	889	1130	1440
7	3	828	1053	1342
7	6	774	984	1254
7	9	725	921	1174
8	0	680	865	1102
8	3	640	813	1036
8	6	603	766	976
8	9	569	721	921
9	0	537	683	871
9	3	509	644	824
9	6	482	613	781
9	9	458	582	742
10	0	435	553	705

Value of produce.

It may be useful before closing this Section to set forth approximate values of coppice produce. The values will, of course, vary with seasons, demand, and locality, but they will serve for purposes of comparison :

Faggots in the wood	12*s*. to 14*s*. per 100.
Withes in the wood	1*s*. 6*d*. to 2*s*. per 100.
Stakes and hurdles	10*s*. to 12*s*. per doz.
Rick pegs...	1*s*. 6*d*. per 100.
Lamb creeps	1*s*. 6*d*. each.
Poles...	2*s*. 3*d*. per doz.
Spike rods	1*s*. per 100.
Bean sticks	2*s*. per 100.
Teazle poles	10*s*. per 100.

SECTION II.

Plants Suitable for Underwood.

HAZEL—SWEET CHESTNUT—ASH—WILLOW—BEECH—BIRCH—OTHER VARIETIES.

Of the various plants suitable for coppice growth, we may mention, firstly :

Hazel.

The Hazel (*Corylus avellana*), which is indigenous to the temperate climate of Europe. It is very hardy, and is consequently found in all situations. It is deciduous and monœcious, *i.e.*, it casts its leaves in winter and carries its stameniferous and pistiliferous flowers separate, but on the same plant, the well-known catkin being the one, the bright scarlet tuft found on examination, but not easily seen from a distance, being the other.

Its growth in good soils and in sheltered situations is very rapid, often as much as five feet in one season. It forms the most ornamental and useful of all our underwood plants, holding its leaf tenaciously long after frosts have set in, and thus giving the rich colour to the autumn landscape.

The Filbert, the Cob, the Barcelona, and other nuts, are all species of the genus to which the hazel belongs. To secure, however, their fruit-bearing qualities it is necessary to propagate them by grafts or layers.

Mode of propagation.

The common hazel, for simple underwood purposes, is grown from nuts; these should be selected, which may be done by sifting through a riddle, as weak plants are generally obtained from small nuts. The nut should be planted in a bed in October, and covered with an inch of soil; they will break through in spring, and should be kept clear of weeds. When a year old the strongest plants should be transplanted in rows, the plants at a distance of about nine inches apart and the rows at a distance of one foot. Under ordinary circumstances they are left in these lines two years, and then removed to their destination. The lines should be kept well hoed and free from weeds throughout their infancy.

Time for planting.

Planting hazel may take place from October to spring, provided the weather is open; autumn planting is, however, the best, as the plants are better able to bear the heat of the ensuing summer. Care should be taken in the planting, especially where the plants are large; the holes should be large enough to take them without force. When young and small they may be planted with less care, as they are not so readily checked. After planting, the only attention they will need is to have the vacancies caused by death filled up, and be kept as much as possible from the bite of ground game. When, however, they are injured by biting it is best to cut the plant down with a sharp knife rather than leave the injured shoot to struggle on to a diseased maturity.

As a hedge plant the hazel is comparatively useless; unlike the quickset, it will not bear constant cutting, and consequently the neat and trim appearance so necessary in a hedge cannot be obtained. Where, however, it exists the best plan is to lay it, using as little deadwood as possible.

Sweet chestnut.

SWEET CHESTNUT (*Castanea vesca*) may be placed next in order of importance. It has already been noticed under the head of "Timber," but, like many other timber trees, it yields, when cut, a growth of shoots from the stool, which increase in number with each successive cutting. The shoots of the sweet chestnut are valuable as hop poles, therefore in hop districts it should never be omitted from plantations if the soil is suitable. In this use consists its principal value, and for that purpose may be said to rank third; larch and ash being first and second respectively. It will come to maturity as poles in from seven to ten years, according to the nature of the soil upon which it is grown. The propagation for this purpose is similar to that already described, and it is unnecessary to transplant so often as would be the case if the plants were needed for timber, fruit, or ornamental trees. It thrives well in the shade, and may therefore be grown among fir plantations. It also thrives on light and inferior soils, and this consequently forms another reason why it may be chosen to accompany fir. It is not a favourite plant with rabbits, therefore often escapes injury.

Ash.

ASH (*Fraxinus excelsior*) is a valuable underwood plant, and, as already stated, its presence or absence greatly affects the value of underwood. It grows from stools, and increases three or four-fold with each cutting. It is very liable to the attack of ground game—perhaps more so than any other, except laburnum. When cut, it should be cut clean, and as near the stool as possible.

Mode of propagation.

It is propagated as already described in our reference to it as a timber-tree, and, like the chestnut, needs but little transplanting for this purpose. It may be planted alone four feet apart, or mixed with other plants in fair proportion. It will be ready to cut, under favourable circumstances, in from eight to twelve years. After the first cutting, gaps may be filled up by layers or by new plants from the nursery. Layering has already been described, but it may be well to bear in mind that no plant is more successfully treated in this way than the ash.

The stools yield large crops of poles, which are used for hoppoles, when of proper size, and if too large for this, they may be split up for sheep-cages, hurdles, whippletrees, and other purposes.

Uses and value.

Hop-poles of this description will always realise a high price. If twelve feet long, they will be worth in the wood 12*s.* to 14*s.* per hundred; if fourteen feet long, 14*s.* to 16*s.*; if sixteen feet, 20*s.* to 22*s.* Plantations of ash as underwood will often realise from 20*l.* to 30*l.* per acre. It thrives best on rich soils and in sheltered situations, and cannot be recommended at all for high and exposed situations. For further particulars the reader is referred to "The Ash as a Timber-tree."

It will be necessary now to give little more than a list of those plants suitable for underwood, as the plants have already been discussed under the head of "Timber." It must, however, again be stated that what constitutes a coppice plant is its power to grow from stools. Without this quality it is useless. In the following list the plants are enumerated as nearly as possible in the order of their relative merit and importance as growth for underwood.

Plants suitable for underwood.

OAK (*Quercus*).—Oak, as to which it is to be observed that the younger the stool the better will be the shoots. Stumps of old trees may, however, be induced to throw out shoots by dressing the surface with an adze to a conical form, and keeping down the surrounding grass for the first year. All lateral or ill-grown shoots should be broken off. It should be borne in mind that the produce of oak coppice yields a large quantity of valuable bark.

MAPLE (*Acer campestris*).—Maple is useful as a hoppole plant.

WILLOW (*Salix caprea and others*).—Willow is also a free grower from stools, and very rapid in growth, and clean in bark. The red-hearted willow forms a valuable hop pole. Its qualities have, however, been already discussed.

BEECH (*Fagus sylvatica*).—Beech is grown as an underwood, but is not recommended.

BIRCH (*Betula alba*).—Birch may be profitably grown upon poor soils, but not where plants of more value grow freely. It may be used for hop poles, but soon decays; twelve-foot poles being worth only 6*s.* to 8*s.* per hundred.

OTHER VARIETIES.—The SLOE OR BLACKTHORN (*Prunus spinosa*). The OSIER WILLOW (*Salix viminalis and others*). The HOLLY (*Ilex aquifolium*). BLACK POPLAR (*Populus nigra*). GREY POPLAR (*P. canescens*). SYCAMORE (*Acer p. platanus*). ALDER (*Alnus glutinosa*).*

---

* It should be borne in mind by the forester that he has great control over coppice. By care and judgment he may create a valuable property, whereas by neglect he may destroy the most promising areas. Existing areas may be improved by planting or layering, by judicious felling of heavy-topped oaks or umbrageous beeches, by the careful preservation of seedling oaks, and by protection from bite of rabbits. He may, in districts where oaks grow freely, gradually convert his coppice into high wood; or, *vice versa*, he may gradually dismiss the timber and encourage the coppice. When planting new areas he may determine after the lapse of, say, fifteen years, whether he will treat it as high wood or coppice, as, with the exception of the selection of plants, the treatment will be almost identical. In districts where there is no demand for underwood he will be satisfied by encouraging the growth of shrubs, such as snowberry, privet, hollies, and so forth, both for effect and for the retention of moisture. On sandy loams or soils suitable to the development of rhododendrons they should never be omitted from fir plantations.

CHAPTER V.

FENCES.

SECTION I.

Their Varieties and General Management.

ECONOMY OF GOOD FENCES—PLANTING OF NEW HEDGES, PREPARATION OF BED—TIME AND MODE OF PLANTING—MANAGEMENT OF OLD QUICK HEDGES—GRUBBING HEDGES—TRIMMING HEDGES—PRACTICAL HINTS AS TO HEDGES GENERALLY—DEAD FENCES OF DIFFERENT KINDS, POST AND RAIL, PALES, PALING, SCOTCH FENCE, OTHER KINDS OF WOODEN FENCES, WIRE FENCING, CONTINUOUS IRON FENCE, WALLS—TABLES FOR CALCULATING THE NUMBER OF PLANTS REQUISITE FOR PLANTING.

Chap. V. Sect. 1. *Their Varieties and General Management.*

Economy of good fences.

A fence may, according to its etymology, be defined as any object, artificial or natural, be it hedge or railing or water-course, whereby a barrier is constructed between adjoining lands. Good fences, either live or dead, are necessary to good management. Nothing conduces more to give evidence of good management; as, no matter how thoroughly the fertility and general repairs of the estate are kept up, bad fences will give an air of untidiness and slovenliness to the whole. And yet how often do we find estates burdened with badly kept fences, and also with unnecessary ones. We say burdened because, with regard to live fences, it may be said that fences in bad repair are not only a constant direct drain upon the pocket, but also a drain upon the woods and plantations for material. Only those acquainted with estate management can form an idea of the amount of material required by tenants and home-farm baliffs for this purpose. This drain can only be overcome by planting good live fences, and by keeping them, when planted, in repair. When once the work is performed, a small annual outlay only is required; an outlay but little felt, as it may often be done between farm operations, and by old men not otherwise employed.

When material is applied for, for new fences, it would be a good plan to insist upon a proviso that a thorn or other live fence be planted at the same time, the landlord finding plants, the tenant labour. So when material is required for stopping gaps, it would be well to insist on filling up at the same time with hollies or some other plant that will grow where others have failed. Where there are hazel and ordinary copse-stuff hedges they should be laid, and only cut when cutting is inevitable. If this is done by men accustomed to the work little dead wood will be required, and, instead of the hedge being filled with dead wood, making the gaps greater, we shall have a live fence pleasing to the eye, and easily kept trimmed.

Planting new hedges.

Under the list and description of plants suitable for hedge planting, which will be given hereafter, we shall enumerate those points necessary to remember to ensure successful growth; but in any case success is only attained by care and attention when the hedge is young, and by careful treatment in old age. A good hedge may be grown by judicious planting and treatment; but a good hedge may also be obtained from an old and neglected one.

Preparation of bed.

In the first case a good bed must be prepared according to the situation and nature of the soil. If in a high and dry situation it may be prepared on the flat, the ground being dug and trenched to the width of a yard, and some well-rotted farm manure being applied at the same time.*

---

* It is also a good plan to utilise road scrapings, turf cuttings, leaf mould, and other refuse for this purpose.

If in a wet situation a ditch should be cut on each side, sod banks being formed with the top sods, and the space between them being filled up with the loose earth. For this purpose a width of at least four and a half to five feet will be required. Some manure may also be applied, but the soil should be left exposed to the atmosphere for some time before planting to become pulverised and matured. When on the side of a hill a ditch must be cut on the lower side and a single sod bank formed above, backed by the loose earth; and upon this bank the hedge should be planted. In dry situations, and those subject to drought, as in the case of sandy soils, the plants may be put in on the flat, but a drain on each side should be formed to carry off the surface water. In fact, the bed must be prepared entirely to suit the nature of the district and soil. When fences are planted between arable and pasture lands the ditch should be on the arable side.

Time and mode of planting.

The bed being ready, the plants will be laid out either in autumn or early spring, as the case may be, about eight or nine inches apart, and planted alternately in two lines, about five or six inches being left between the lines; when planted they may be cut off with a sharp knife about two or three inches above the ground, as they will root more freely this way than when left their natural height. This being done they must be kept forked and freed from weeds, especially from grass, as they will make no headway if choked with grass and weeds; this will give but little trouble if attended to early. Some prefer the plants in a single row, six inches apart, and also prefer cutting back a year after rather than at the time of planting.

Protection from bite of sheep.

If in an exposed situation where sheep and cattle graze a fence must be erected at once, as nothing is more fatal than the bite of sheep and cattle to young hedges. Although the first expense is great, it is best where practicable to erect a double fence, the hedge being then secured against all injury.

The amount of dung necessary for hedge planting will be about one cubic yard of dung to two hundred yards of hedge one yard wide. It is as well not to apply it directly to the young plants. Therefore, where practicable, a crop of some kind, say potatoes or carrots, may be grown in the first instance upon the bed. The result of this course often is to bring down the expense to cost of plants and planting only

Planting.

When planting a line should be laid along the centre of the bed, and with a sharp spade a vertical cut made to the desired depth—in accordance with the age and size of the plants; the earth being thrown on one side to form a trench. One man will then lay the plants in their places and at the correct distance apart, arranging the root fibres, and another man with a spade will throw the soil over the roots, which the former will place in position with his hands. This being done to the full length of the line, the whole will be re-earthed and carefully trodden in. When the whole length of the hedge has been planted, the men should go again carefully over and tread and trim the hedge into a uniform line. Every spring the soil beneath should be dug and cleaned, and the rapid growth of the hedge will repay the extra money so expended. Hedges carelessly planted, and afterwards neglected, will never give satisfaction.

If the plants are strong, about six will be required to the yard.

Management of old quick hedges.

The treatment of old quick hedges is important, as no matter how old these plants may be, if there are plenty of them, a good fence may soon be made. Quicks, or thorns, will bear any amount of cutting; in fact, the more they are cut the better they thrive, and this fact may be borne in mind in all treatment of these hedges. Where practicable the hedge may be cut down close to the ground, when the after treatment of the young shoots will be similar to that of a newly-planted hedge. When, however, the hedge forms the fence of pastures where cattle or sheep graze, this cannot be done without the erection of a dead fence, which at once makes the operation an expensive one. The necessity for such an erection can be overcome in the following way: Let the hedge be cut down to fence height, and one side only be cut or "brushed" that season, leaving the side where cattle range untouched. The old growth which remains uncut forms a blind on that side, and prevents, to a great extent, injury from cattle forcing their way through, as they would do were both sides trimmed at once. When this is done let all gaps be substantially filled with stumps and rails. In the summer let the first cut side, which will have made vigorous growth, be trimmed, and in the following winter treat the other side in the same way as the first. Thus in two years you have a well-grown and symmetrical hedge, better probably than if newly planted.

Laying old hedges.

Another method is to cut out all but the longest and best rods and to lay these by partial cutting and interweaving. No dead wood should be allowed to remain, and nothing but growing wood should be permitted in the entire length of fence. This plan cannot be too highly recommended.

It must be remembered that new hedges will seldom grow where old ones have failed without the earth being taken out and replaced by fresh; therefore, in filling gaps, a trench must be dug out and fresh earth put in before planting the hollies and other plants; which should be of vigorous growth.

Grubbing hedges.

When fences have been neglected it often answers to grub them up, especially in situations where shelter is not required. Grubbing is often a less expensive process than the first. The expense will depend of course upon the size of the wood, and the amount of earth upon the bank to be removed, and will vary from 2*d.* to 5*d.* per lineal yard.

Trimming hedges.

A clause should be inserted in all leases and agreements that hedges should be trimmed once a year; a neat appearance is thus secured at all seasons. It answers also to do this from a pecuniary point of view, as it is the cutting of old wood that adds so much to both labour and cost. By this plan the undergrowth is also cut and the seeding of thistles, docks, and other weeds prevented. The trimmings should always be burnt, as seeds are thus destroyed; if allowed to remain or to become scattered, sheep suffer very much from the thorns penetrating their feet; another and important reason why all trimmings should be speedily burnt.

Cost of trimming.

Hedges may be trimmed in summer or winter, for a sum varying under circumstances from ½*d.* to 2*d.* per rod.

Upon home farms the hedges should be cut and attended to by the bailiff whenever possible; but all planting and reclaiming of old fences should be placed in the hands of the forester; the farm, if desired, being debited with the amount of labour. Upon every estate there should be a well-stocked nursery, where, among other plants, should be a constant supply of thorn and other hedge plants. The propagation, however, will be dwelt upon under the description of the several plants.

Practical hints as to hedges generally.

When preparing the trench for reception of the plants, see that the whole length is as nearly as possible of equal quality to ensure regularity of growth. A compost of dung and earth is better as a dressing than dung alone; road scrapings are also useful for the purpose. When planting select plants as much as possible of equal size and strength, keep clear of weeds, and fork regularly for the first two years. Do not trim for two years, but keep overgrown shoots cut back. When trimming for the first time do not cut the bottom too close. Leave three or four inches each year of new growth. Look well to the bottom, the top will take care of itself. Fill gaps the first year with new thorn plants, putting in a few shovelfuls of new earth with each plant. Protect the gaps with stumps and a rail; do not force in bushes. Cut with an upward stroke. Keep water-courses clear.

If these matters are strictly attended to, a good fence will be the satisfactory result.

Dead fences of different kinds.

Before passing on to consider the plants suitable for live fences, a few words will not be out of place on temporary or "*dead*" fences. These consist generally of material found in the district. In some localities, for example, in the oolitic formations we have stone, and here stone walls are the characteristic feature of the landscape. Again, in heath and moor land, fences are formed of sods; in copse districts of rods; in woodlands of timber; and on marshes and swamps of watercourses; and so on. Railways have, however, brought all material so within our reach, that we are now able to erect fences according to fancy.

The kinds of fences we will consider are post-and-rail, park paling, rod or bush fences, wire, continuous iron, and walls.

Post-and-rail.

Post-and-rail fences may be of larch or of oak, or of larch and oak, according to what the estate is best able to produce. The fence is stronger and more durable when the posts are large enough to admit of mortising. The posts should be 9ft. apart, and a stump should be driven in and nailed to the rails in the centre of each panel. The fence may consist of three or four rails, but the latter number is recommended except under exceptional circumstances. The posts should be, if possible, of hard wood. They are generally 6in. by 3in. at the top, and from 5½ft. to 6½ft. long. The rails should be 10ft. long for a panel 9ft. in length, to admit of lap, and they may be inserted in the mortise either lapping top or bottom by an angular cut, or side by side, with a lateral cut; the latter plan is perhaps the best. If of larch they are cut flat and about 4in. to 5in. wide by 1¼in. to 1½in. thick, according to the length of the panel and the purpose of fence. Oak rails are generally cut in a triangular form about 4½in. wide by 4in. at the sides.

Charring the butts.

The post should be dipped in tar at the butts, and the tar burnt off, charring the wood to a certain extent; this should be done where soil and air meet, for it is at this point that decay first sets in. The whole may be tarred or creosoted, but it is unnecessary for durability; if, however, it is tarred, let it be a year after the fence has been erected, otherwise decay sets in earlier than if left untarred, as the natural moisture of the wood is unable to escape; if creosoted, let it be done before erection. This remark also applies to buildings of timber where paint or tar is applied. The tarring should also be done in dry weather. The cost of such a fence will depend to a great extent upon the distance of carriage of material, and whether sawn by steam or hand, but may be stated at 2*s.* 6*d.* to 3*s.* 6*d.* per yard of four rails. So that the expense of such a fence is considerable, but it seldom fails to give satisfaction.

Cost.

Another and more important kind of fence is what is known as park paling. This consists of oak throughout. The posts are from 7ft. to 8ft. long, large in the butt, being generally cut from small trees.* These are sunk fully 2½ft. in the ground and well rammed—when possible with chalk. They are mortised for three rails, one at the top, one in the middle, and one at the bottom, about 1½ft. from the ground. The rails are cut triangularly, as before stated. At the bottom of all is a foot board from 10in. to 12in. wide, and 2in. thick, dovetailed into the posts. Upon these rails split oak pales about 4in. or 5in. wide, and ¼in. or ½in. thick are nailed, slightly overlapping each other. It is a most complete fence and very durable, but expensive. The cost may be reckoned at from 8*s.* to 10*s.* per lineal yard. The nails used for the pales should be galvanised, the ordinary nails being liable to rust.†

Park palings.

Cost.

Another kind is the "Scotch fence." This consists mostly of larch, no other kind of tree being so suitable. The uprights should be not less than 2in., and not more than 3½in. in diameter, being in fact the first thinnings of a larch plantation. They are cut into lengths of 5ft. or 6ft.,

Scotch fence

---

* All sapwood should be cut off such posts and gate posts, otherwise it soon decays and the post becomes loose.

† A brick foundation, say, 1ft. high, will add materially to the durability of this fence.

and pointed top and bottom, and driven into the ground 1ft., about 6in. or 8in. apart. Upon the top of these is placed a rail, bored with auger holes to match the uprights, a nail being driven here and there to prevent its being lifted off. It has the advantage of being difficult to climb, especially when tenter hooks are driven into the top rail; it is also neat, but for durability is not to be recommended, as the stumps being young, and all inserted in the ground, soon decay. In the vicinity of plantations it may be fairly cheap; but if there be a demand of the suitable material for hop poles, it will be too expensive for general adoption. Its average cost may be placed at from 1*s.* 6*d.* to 2*s.* per yard. There are other varieties of timber fencing, as open palings for gardens, diagonal larch, for the same purpose, and the simple stump-and-rail fence, in which the stumps are driven and the rails simply nailed. These all vary in expense, but may be calculated at from 6*d.* to 1*s.* per lineal yard.

Other kinds of wooden fences.

We have also fences of a still more temporary kind, namely rod, wattle, or basket fences, which are made from hazel rods, with uprights of the same material, but somewhat larger in size, driven in about every 15 inches. The rods, split or not as preferred, are interwoven through the uprights. This kind of fence, however, will last but a short time, and consequently is not economical. It is useful for purposes where shelter is required, and may be therefore recommended for nurseries and young plantations; but it cannot be depended upon for a period exceeding two years, when more than ordinary pressure is put upon it.

Wire fencing.

Next in order is *wire*; and this, perhaps, is the cheapest and most durable of all, especially at the present time, when wire, composed of a series of smaller wires and galvanised, is obtainable at so reasonable a figure. It is necessary that the gauge of the top wire be of considerable size, but it may be decreased in the lower strands; this is important as the cost is then materially reduced.

Wire may be strained on iron strainers and uprights, or on wood, as preferred. Where wood is plentiful it is perhaps cheaper, and has this advantage, that where breakages occur, a new stump may be driven in, and the wire stapled on. Immense stress is exerted by the screw used for straining the wire, and care must be taken to sink the straining posts deeply, to have them well rammed, and a strong stay placed against them on the inner sides; if this is neglected a post may be drawn from the ground. Stumps are driven in either before the straining or after, and the wire stapled to them; the staples, however, should never be driven "home," but sufficient space should be left for the wire to work freely. There are now, however, a number of iron straining posts, all possessing more or less merit, which cannot fail to diminish the use of wood. A fence of this character is rapidly put up, and costs about 1*s*. or 2*s*. per yard.

Continuous iron fence.

Another most excellent fence is the *continuous iron;* and for appearance and usefulness there is perhaps none better, It may be obtained of any size and height, and costs from 3*s*. to 4*s*. a yard.

Walls.

Next, and finally, we come to *walls*. In certain districts stones abound, as, for instance, in soils on the oolitic formation. Here they are of a flat and shaly nature, and well adapted to the purpose of walls; particularly where, as in many localities, they lie scattered on the surface, and need only collecting. There are men who make this building of dry walls their principal occupation, and it is to them we must look for success, as a wall built by an inexperienced hand will soon fall down. The process is to bind the work together at various intervals by whole stones running through the wall. On the top, mud or mortar is placed, and the coping stones laid on, whereupon the wall is complete. Such walls suffer a good deal in the hunting season, but otherwise remain, with slight repair, for years. The cost varies of course in different localities, but it may be stated at 9*d*. to 1*s*. per yard.

CHAP. V. Sect 1. *Their Varieties and General Management.*

Sod walls are seldom resorted to in this country, nevertheless in some districts a cheap and durable fence is procured by such means. In the colonies we have seen most complete and durable fences built entirely with sods. The sods are cut with sharp spades, ground on the grindstone until they have an edge like a knife. The cuts are made with great precision and regularity, and the sods when cut are placed in position by the builder and fit like joiner's work. At the bottom, in order to obtain a base, a space is left between the first few lines of sods, which is filled up with the earth taken from the ditch, and this base must correspond to the height. The cost of such walls is, of course, for labour only, and may be reckoned about 4*d*. or 9*d*. per lineal yard, according to height. It is only, however, where sods can be cut that such walls can be profitably built; on arable land, for instance, it is a matter of impossibility, as a turf of some kind is indispensable.

These, then, are the most important varieties of fences in use in Great Britain, and will be resorted to in accordance with the material most easily obtainable in each district.

Although the maintenance of fences is implied in the term "repair," the legislature has in the Agricultural Holdings Act of 1883 embodied in Part 1 of the First Schedule the "Making of fences" as a subject of compensation; and, in the Act of 1900, in the substituted First Schedule, the "Removal of permanent fences" is incorporated with it. Being improvements in Part 1, the consent of the landlord is required. The object of this is, of course, to encourage the erection of new permanent fences where required, and the removal of old fences in the case of enlargement of fields or for re-arrangement. The law in regard to fences is not affected by this new departure.

TABLE FOR CALCULATING THE NUMBER OF PLANTS AT ANY DISTANCE FROM 6IN. TO 3FT. APART, REQUIRED FOR ANY LENGTH OF HEDGE, IN YARDS.

DISTANCE APART.		LENGTH OF HEDGE IN YARDS								
ft.	in.	1	2	3	4	5	6	7	8	9
0	6	6·0000	12·0000	18·0000	24·0000	30·0000	36·0000	42·0000	48·0000	54·0000
0	7	5·1429	10·2858	15·4287	20·5716	25·7145	30·8574	36·0000	41·1432	46·2861
0	8	4·5000	9·0000	13·5000	18·0000	22·5000	27·0000	31·5000	36·0000	40·5000
0	9	4·0000	8·0000	12·0000	16·0000	20·0000	24·0000	28·0000	32·0000	36·0060
0	10	3·6000	7·2000	10·8000	14·4000	18·0000	21·6000	25·2000	28·8000	32·4000
0	11	3·2727	6·5454	9·8181	13·0909	16·3636	19·6363	22·9090	26·1818	29·4545
1	0	3·0000	6·0000	9·0000	12·0000	15·0000	18·0000	21·0000	24·0000	27·0000
1	1	2·7692	5·5384	8·3076	11·0768	13·8960	16·6152	19·3844	22·1538	24·9228
1	2	2·5714	5·1428	7·7142	10·2860	12·8570	15·4284	18·0000	20·5720	23·1426
1	3	2·4000	4·8000	7·2000	9·6000	12·0000	14·4000	16·8000	19·2000	21·6000
1	4	2·2500	4·5000	6·7500	9·0000	11·2500	13·5000	15·7500	18·0000	20·2500
1	5	2·1177	4·2254	6·3531	8·4708	10·5880	12·7062	14·8236	16·9416	19·0593
1	6	2·0000	4·0000	6·0000	8·0000	10·0000	12·0000	14·0000	16·0000	18·0000
1	7	1·8947	3·7894	5·6841	7·5788	9·4735	11·3602	13·2629	15·1576	17·0523
1	8	1·8000	3·6000	5·4000	7·2000	9·0000	10·8000	12·6000	14·4000	16·2000
1	9	1·7143	3·4286	5·1429	6·8572	8·5715	10·2858	12·0000	13·7144	15·4287
1	10	1·6363	3·2727	4·8080	6·5454	8·1818	9·6161	11·4545	13·0909	14·4242
1	11	1·5652	3·1304	4·6956	6·2608	7·8760	9·3912	10·9564	12·5216	14·0868
2	0	1·5000	3·0000	4·5000	6·0000	7·5000	9·0000	10·5000	12·0000	13·5000
2	1	1·4400	2·8800	4·3200	5·7600	7·2000	8·6400	10 0800	11·5200	12·9600
2	2	1·3846	2·7692	4·1538	5·5384	6·9230	8·8076	8·6922	11·0768	12·4614
2	3	1·3333	2·6666	4·0000	5·3333	6·6666	8·0000	9·3333	10·6666	12·0000
2	4	1·2857	2 5714	3·8571	5·1428	6·4285	7·7142	9·0000	10·2856	11·5783
2	5	1·2414	2·4928	3·7242	4·9656	6·2070	7·4484	8 6898	9·9312	11·1726
2	6	1·2000	2·4000	3·6000	4·8000	6·0000	7·2000	8·4000	9·6090	10·8000
2	7	1·1613	2·3226	3·4839	4·6452	5·8565	6·9678	8·1291	9·2904	10·4517
2	8	1·1250	2·2500	3·3750	4·5000	5·6250	6·7500	7·8750	9·0000	10·1250
2	9	1·0909	2·1818	3·2727	4·3636	5·4545	6·5454	7·6363	8·7272	9·8181
2	10	1·0538	2·1177	3·1764	4·2352	5·2940	6·3528	7·4116	8·4704	9·5291
2	11	1·0288	2·0577	3·0866	4·1155	5·1444	6·1733	7·2022	8·2311	9·2600
3	0	1·0000	2·0000	3·0000	4·0000	5·0000	6·0000	7·0000	8 0000	9·0000

SECTION II.

PLANTS SUITABLE FOR FENCES.

COMMON THORN—BEECH—HORNBEAM—HOLLY—FURZE.

Chap. V. Sect. 2. *Plants Suitable for Fences.*

Common thorn.

The Common Thorn or Hawthorn (*Cratægus oxyacantha*) is the most universal of our hedge plants, and deservedly so. By nature it is a small tree, but it is not only one of those which bear, but also thrive under, repeating cuttings, It bears a pretty and sweet-scented white flower, and blooms freely in May and June, hence its common name of May.

Growth and form of hedge.

Some proprietors like one plant left at intervals to attain full growth, the rest being trimmed closely. This, when in flower, adds greatly to the beauty of an estate, but it injures the hedge underneath and cannot be recommended.

The thorn is better adapted than any other plant for fencing, owing to its thorny nature, making it, when well grown, absolutely impenetrable; and by repeated cuttings it becomes exceedingly tough and durable. As to its treatment it is almost impossible to lay down absolute rules; indeed, there is more difference of opinion with regard to the treatment of hedges generally than in any other matter relating to estate management. We are, however, of opinion that when a thorn hedge is planted, it is best to cut all the plants to about three inches from the bottom, then to keep the ground clear of weeds and frequently moved with the hoe or fork, and to leave the plants uncut for two years; the wood by this process becomes larger and better able to stand against the knife. It may then be cut down to a height of a foot or a foot and a half, and trimmed, leaving as good a base as possible. The form of the hedge should be slightly wedge-shaped; this gives it strength, and also keeps the bottom thick and close, which is desirable where sheep are grazed. If kept very round, the top is apt to become covered with moss and lichen, and if straight, the fence is weak where it should be strong. The desirable shape is best attained by the process called "breasting," that is, cutting it so as to leave the twigs at the bottom on the outside uncut one year and on the inside the following year. The next year the whole may be trimmed together, leaving about three inches growth of the previous year. "Breasting" should not be repeated except at intervals of some years.

The process of reclaiming an old hedge has been already noticed; another plan, however, is sometimes resorted to in the case of a thorn hedge, and that is by laying, similar to that of a hazel hedge. Quick or hawthorn will, in fact, bear any treatment except neglect, and man may use his own devices, no matter how peculiar, so long as judicious pruning accompanies them. If left to itself it resumes its natural form of tree-growth, which of course makes the fence open and bare at the bottom.

Propagation.

Hawthorn is propagated from seed, and as its treatment is somewhat peculiar, a few words are necessary with regard to it. The seed ripens in autumn, and may be gathered during the early winter months. It is then mixed with sand or light dry earth, and left for a year. It should at first be laid out thinly and turned occasionally, as it may otherwise heat; and then be placed in a heap, being mixed with more sand and covered over with straw, like potatoes. This rots the fleshy cuticle. If planted the same year it would lie dormant for one season. In the nursery it must be kept clear of weeds, and where too thick, be thinned, the thinnings being transplanted into lines about one foot apart, the plants being placed about five or six inches from each other. The following year the whole will be transplanted into rows and kept well hoed, and there the plants may remain one or two years, according to circumstances, when they may be planted out. When transplanted the roots may be slightly cut back. Seed is nearly always

Chap. V. Sect. 2 *Plants Suitable for Fences.*

plentiful, and the treatment simple, so there is no reason why every estate should not be well supplied with plants. In one instance, however, this is not the case, and that is on light sandy soils; under these conditions it is best to buy strong plants from other districts. A fence of this plant, with judicious care and treatment, may be formed in eight years—*i.e.*, on suitable soils.

Beech.

BEECH (*Fagus sylvatica*) forms a good hedge, and perhaps its use for the purpose is too little regarded. By repeated cuttings it becomes tough and pliable, and, on account of the retention of the leaf well into the following spring, forms, like the hornbeam, an excellent shelter in winter. Unlike the hornbeam, it thrives well on the chalk. The plants are obtained from seed. The mast should be collected when fallen from the trees, and kept in a room until spring, when they may be planted in the nursery; their after treatment is similar to that already described, except that no root pruning should take place after the first year. The plants must be allowed to remain in the bed until the following winter, when they may be lifted and their tops cut, which latter operation tends to develop the root-fibres. They should then be placed in rows and so left for two years, being kept hoed. At the end of this time they may be either transplanted or left again for two years, or planted out direct, according to requirements.

Propagation.

In the former case the plants will be about one and a half feet high, and in the latter about three feet. They should be planted 1ft. apart, and sloped (*i.e.*, planted at an angle) so as to cross one another, forming by this plan a trellis-like fence, really impenetrable.

The side shoots may be cut off the first year; and the second year the hedge may be cut in the usual way. A hedge of this kind will often attain great height, and is very beautiful.

The best season for trimming this plant is in July, as it then throws out more summer shoots and becomes more dense. A good plan when planting is to tie the cross plants, taking care first to bark the place where they cross, they may then unite and form a trellis work quite impervious to sheep and cattle.

Chap. V. Sect. 2. *Plants Suitable for Fences.*

Hornbeam.

The HORNBEAM (*Carpinus Betulus*) is a native of Great Britain, and perhaps, next to the hawthorn, is our most valuable hedge-plant. It resembles the beech, but may be distinguished by the feathery and more deeply serrated leaves. It will not form a hedge so rapidly as the beech, but bears cutting better, and is also more hardy. The flowers are unisexual, the sexes being on distinct catkins on the same plant. The seed is a small nut, which may be planted in the spring, but will lie dormant one year, or it may be treated as the thorn. As a timber tree it is but little grown, though the wood is exceedingly strong, and will bear a greater strain than any other English timber. It is white in colour, and of fine texture. It is used in rural districts for handles to tools, &c. The plant retains its leaves late into the year—in fact they often remain till after the new leaves have burst—and on this account it forms good shelter in exposed situations. It is often planted with the hawthorn, and forms in this way a very valuable hedge; the proportion may be one plant of hornbeam to six of hawthorn. As a firewood it is the best, yielding great heat and a clear flame. It roots deeper than the beech, and consequently is less injurious as a hedge plant to surrounding crops. It is very hardy, and free from nearly all diseases. It thrives best on a clay soil, or a clay loam, though it will grow well as a hedge plant on any soil if not too light.

Holly.

The HOLLY (*Ilex aquifolium*).—The treatment of holly is very similar to that of the hawthorn, as far as regards propagation. Some, however, are of opinion that it requires to be two years in the pit before sowing; whether this be the case or not it is often eighteen months in the seed bed before it shows itself. When the bed is too stiff and adhesive it will often rot in the ground. The berry contains several seeds, and when collected from the tree in the autumn they should be mixed with double the amount of dry earth or sand, and kept turned occasionally for six weeks and then pitted as already described. In the following year they are sown in beds (which may be three and a half or four feet wide) and covered with half an inch of soil—one bushel, half sand and half seed, being sufficient to sow such a bed to a length of eight or ten yards. Transplant every other year to develop growth of root fibre, keeping the rows free from weeds and well hoed, as circulation of air through the root is very necessary; a well rooted plant being absolutely necessary to future growth.

Exceptional uses as a hedge plant.

This plant is indigenous to Great Britain and attains considerable size. Its value as a hedge plant consists in its love of shade, and in its capacity for development under drip of trees. It is, with the exception of the yew, the only plant we can depend upon under these circumstances. It is also an excellent "fill-gap," and will grow under the shade of a hawthorn hedge and rapidly fill a gap which has defied other processes. In hard winters sheep will often bark the lower branches, and, as it does not throw out lateral branches readily, it is apt to suffer greatly from their attack; it is not, therefore, a good plant for the division of fields, except, as already stated, for filling gaps. For a garden fence, however, it is invaluable, from its glossy evergreen leaf and thick foliage. As a timber it is hard, and capable of taking a high polish, which fits it for furniture-making and other cabinet-makers' work. One peculiarity of this plant is that it transplants best in June and July; winter planting generally ends in failure. If preferred the seed may be sown direct upon the prepared hedge line, and the plants thinned as may be necessary.

Furze. GORSE, FURZE or WHIN (*Ulex Europœus*), called by the former name in England and the latter in Scotland. It forms a valuable hedge plant in poor districts possessing clay subsoils. Its growth is rapid, and requires early switching, or it quickly assumes an irregular growth. It will not stand severe frosts, and, after attaining full size, it rapidly dies out; it cannot therefore be recommended as a permanent hedge-plant. It is, however, a cheap kind of fence, as it is only necessary to form a trench on the top of a turf mound in which to sow the seed, and, if kept from bite of cattle, it will form a fence not easily broken through, owing to its spiny nature. When cut at certain intervals, as is the case in plantations and coverts, it retains its vitality for unknown periods; it is only when allowed to attain its full growth without switching that it becomes weak and useless. After cutting, the young shoots soon appear, and in a few years it is ready to cut again. **Uses.** It is, also, in its fully developed state, very inflammable, and should not be grown near buildings. When cut, it forms a valuable fuel, especially for brick-burning, as it yields immense heat. It should be tied in faggots when cut, and stacked when green; the stack being so built as to keep out rain, as, if exposed to wet, it soon becomes rotten, and the steam given off when placed in the furnace injures the bricks. When young it forms a valuable feed for all kinds of stock, but is seldom used except where it abounds naturally on commons, where other food is often scarce. When used in this way, it is bruised with hammers or passed through rollers made for the purpose. As a cover it is invaluable, and when in flower it is very beautiful, and yields a plentiful supply of seed. For covers about twenty pounds of seed per acre will be found sufficient, and may be sown with oats, or by itself. It will show but little for the first year or two, but afterwards becomes most vigorous. It forms an excellent shelter in wet weather, as, from the peculiar nature of the spines, the rain follows the course of the plant and does not drip.

CHAP. V. Sect 2. *Plants Suitable for Fences.*

The foregoing are better adapted than any other class of plants to purposes of field fencing; nevertheless all plants which will bear constant pruning are capable of conversion to this purpose. For garden fences, where ornament alone is required, privet, box, laurel, the various cypresses, yew, briar, broom, and berberis are all useful.

CHAPTER VI.

GRASSES SUITABLE FOR WOODS AND PLANTATIONS.

SELECTION OF SEEDS—LIST OF USEFUL GRASSES—MODE OF SOWING—TREATMENT OF RIDES IN WOOD.

Selection of seeds.

It would be outside the limits of the present work to attempt to describe minutely the particular species of grasses best adapted to every variety of soil. In practice the best plan will be found to apply to some firm of reputation, giving full information as to the geological formation, the situation and nature of soil, and the purposes for which the seeds are required, and they will forward them either mixed or separate, as may be desired. The practice of sowing seeds so selected will give more satisfaction than allowing the natural grasses of the district to grow without interference; and if sown when plantations are made, the grasses get fully established before the shade is sufficient to retard their growth.

List of useful grasses.

The seeds most useful for the purpose may be enumerated as follows :

1. *Agrostis Stonolifera.*—Fiorin or Creeping Bent.
2. *Aira Cæspitosa.*—Tufted Hair-Grass or Hassock.
3. *Arrhenatherum Avenaceum.*—Tall, oat-like Grass.
4. *Brachypodium Sylvaticum.*—Wood Fescue Grass.
5. *Bromus* or *Festuca Giganteus.*—Giant Wood Fescue.
6. *Bromus Arvensis.*—Field Brome Grass.
7. *Dactylis Glomerata.*—Cock's Foot Grass.
8. *Elymus Arenarius.*—Upright Sea Lyme Grass.

Chap. VI. *Grasses.*

9. *Elymus Giganteus.*—Giant Lyme Grass.
10. *Festuca Duriuscula.*—Hard Fescue.
11. *Festuca Elatior.*—Tall Fescue.
12. *Glyceria Aquatica.*—Water Sweet Grass.
13. *Glyceria Fluitans.*—Floating Grass.
14. *Holcus Lanatus.*—Yorkshire Fog Grass.
15. *Millium Effusum.*—Wood Millet Grass.
11. *Poa Nemoralis.*—Wood Meadow Grass.

The above-named grasses are all more or less fitted for covers, thriving for the most part in shady places, being coarse in growth, giving excellent cover, and, as they are bearers of large seeds, are much liked by birds. Many of them are unfit for pasture, being bitter and acrid. The list of course comprises those fitted for various localities, from light dry soil to the rich soil of the neighbourhood of streams and ponds. Nos. 8 and 9 are those specially adapted to sandy situations, especially near the sea, and Nos. 12 and 13 to situations near watercourses and ponds.

Mode of sowing.

The best methods of sowing the seeds of Nos. 2, 3, 4, and 6 is the following: Mix equal quantities of each, and give this mixture to the woodman, with instruction to fork the soil in those places through the woods and plantations where grass is required, and sow a few handfuls of seed, covering and treading it in. The large seeds of the *Bromus giganteus*, No. 5, may be sown separately, and should be covered one inch with soil, or it may be sown in nurseries and planted out. The ordinary pasture grasses may be sown in the rides, adding also Nos. 1, 7, 10, 11, 14, 16, mixed with a little *Trifolium repens* (Dutch clover), *Trifolium minus* (yellow clover), and *Lotus corniculatus* (bird's foot trefoil). In open woods No. 2 is recommended; this grass is not only propagated by seed, but it throws off sprouts or small joints from the roots, which become after a while separate tufts.

It may be well in passing to notice the *Tritoma grandiflora*, which, though not a grass, is a very suitable plant for covers, and very ornamental. It is a hardy perennial, and easily propagated.

Treatment of rides in woods.

Keeping the rides through woods and plantations in order is part of the duty of the forester. This is best done in September or October. At an earlier period the gamekeeper dislikes much movement in the woods on account of the young birds, and if done whilst growth is still taking place a second growth sets in, and gives an untidy appearance when shooting commences. It is necessary to trim the sides of the underwood, mow the grass, clear out old ditches and watercourses; and, where needed, cut new ones to carry off surface water, taking care to slope the sides to prevent falling in, and so causing stoppage and overflow. It may be repeated here that all drains in woods and plantations should be open, as pipe drains quickly become choked with the roots and fibres of the trees. It will also be well during this period to see to the fences and gates, and have all secure and in good order for the winter.

CHAPTER VII.

THE "HOME FARM."

LAND AGENT'S RELATION TO THE HOME FARM—EXPERIMENTS ON THE HOME FARM—THE BAILIFF AND HIS DUTIES—LABOURERS—ANNUAL VALUATION—SUPPLY OF PRODUCE TO THE HOUSE—LIVE STOCK—DAIRY COWS—FAT STOCK—STORE AND YOUNG STOCK—SHEEP—LAMBING—SHEEP FOOD—HORSES—PIGS—POULTRY—FARMYARD MANURE—SEEDS—HAY—HARVEST—LAYING DOWN PERMANENT PASTURES—CULTIVATION OF HOPS—MAKING OF ENSILAGE—IMPLEMENTS—EARMARKING CATTLE FOR PURPOSES OF REGISTRATION—TOP DRESSING EXPERIMENTS ON GRASS LAND.

CHAP. VII. *The Home Farm.*

THE subject of the "Home Farm" will be treated as it bears upon estate management, rather than from a purely agricultural point of view. The works upon agriculture are so numerous as to make many remarks upon the subject unnecessary. The treatment, however, of a home farm bears directly upon estate management. Consequently we cannot pass it by.

Land agent's relation to the home farm.

The land agent must, to fill his position thoroughly, be a practical and scientific agriculturist. He is not often called upon to act as bailiff, and ought not to be on large estates, but he must retain as his right the power of oversight over the home farm, without unnecessarily interfering with the bailiff in charge. He must also check expenditure, audit accounts, and prepare the yearly balance-sheet for presentation to the proprietor. He will also be expected to be ready to render advice on points connected with agriculture and the feeding of stock, both as regards the conduct of the home farm, and in matters relating to the tenants. We take this opportunity, therefore, of impressing upon the pupil the necessity of thoroughly acquainting himself with agriculture in all its branches. He can never consider himself fully qualified until he has recognised and obtained this knowledge. We are led the more to give this advice as many gentlemen who have presented themselves to the writer for education have informed him "that they only wish to learn estate management, not agriculture." But the two are inseparable.

The "home farm," as its name implies, is that portion of the estate set apart for the use of the proprietor, to supply his house with produce, and to satisfy his tastes in agriculture, if he possesses any. If it be only required for the former purpose, its acreage will depend in some degree upon the size of his establishment, but one or two hundred acres of arable and grass land will probably suffice.

Experiments on the home farm.

Home farms, as a rule, do not pay in a strictly pecuniary sense. If they can be made to pay their rent, it is all that can be expected. In fact, if they do this, the result ought to be looked upon as satisfactory.

Many landed proprietors, whose tastes tend to agricultural and pastoral pursuits, often ride hobbies very hard—hobbies which cost money, and the expense of which should not be debited to the farms they occupy. They may be, and often are, decidedly useful and beneficial, and tend greatly to promote the interests of agriculture, but they do not constitute a part of the economical and prudent management of the home farm. Many a theory has been verified by such hobbies, and many a useful agricultural fact ascertained.

Experiments, the trial of new implements, the testing of new feeding stuffs and manures, are essential to the advancement of agriculture; and if wealthy proprietors will not indulge in these trials, who will or can? Land agents, therefore, do well to forward and promote such experiments within the limits which their experience may suggest to them as prudent and reasonable. It can scarcely be doubted that our English landlords have done more for agriculture than any other class; and this reputation they should certainly be encouraged to maintain. But these experiments should be distinctly conducted as matters affecting the private purse of the landlord, and not the accounts of the home farm. If, for instance, cattle are fed for prize purposes, the farm should not be debited with more than the amount of food required for ordinary purposes; otherwise it will be impossible to discover from the accounts how far the farm is worked on prudent and business-like principles.

The bailiff and his duties.

The home farm is presided over by the bailiff. He will be selected in accordance with what is required of him. If the holding is small, sufficient only for the purposes of supply, a bailiff may be selected from the intelligent class of labourers, more especially where the landlord himself or his agent takes an active oversight of the operations. Where, however, a large acreage is held in hand, and extensive operations are carried on, a man of a different stamp will be required. A man must then be sought for who has already held position on a large farm, or under good and well-known agriculturists, who is able not merely to carry out orders, but to originate an opinion and act upon it.

Bailiffs should be required to keep carefully and neatly a set of books supplied them by the agent, but the books should be as simple as possible. To expect a complicated set of books to be kept by any bailiff is not only unnecessary, but unreasonable. They should be such as will enable the agent to produce from them a cash statement when required, and also produce at the end of the year a balance-sheet.

If a man of the latter class is employed, he should be allowed the privilege of selling and buying, as it gives him an extra interest in his work. A constant attendance at markets is neither necessary nor wise, but a reasonable intercourse with others in like situation is salutary, and gives room for interchange of ideas. With reference to buying and selling, however, one great failing of bailiffs may here be noted, namely, their tendency to encourage "middlemen." They believe that by selling here and selling there, they are in a better position to buy of the same parties. They believe that if they offer samples to Mr. A. and buy their manures, seed, or food of Mr. B., Mr. A. will not treat them with the same liberality as if he had a share of their custom. Our opinion is that to sell to the consumer or miller direct, and buy of the manufacturer, is the true essence of success. The profit attaching to agriculture is so small that it admits of no division. All trades are, of course, subject to this class of men, but none to such an extent as agriculture.

Middlemen.

The bailiff should, at least once a week attend upon the landlord or agent, and give him some idea of the work of the coming week (*i.e.*, as far as weather will permit). If this is impossible, regular communications from the bailiff through the post should be insisted upon, giving every important detail connected with the farm.

He should keep a journal in which all casualties—deaths, with their causes, and births of live stock—should be entered, as well as every other matter of importance.

The economy which must be exercised in every department, not only as an act of justice to the employer, but as the only means of making the farm pay, and also as an example to the tenants, must depend in great degree upon the capacity and care of the bailiff. Extravagance is the common order of the day on most farms. Hay that would sell for 3*l.* or 4*l.* a ton is given in profuse quantities and trodden under foot; straw, now so valuable, is rotted in open yards, the manurial matter running into the gutter.

Three horses are used in place of two. Two men are employed to do the work of one. And this kind of extra-

The Home Farm.

vagance often goes hand in hand with slovenliness of every description. Cattle and sheep, by inattention, are allowed to go back in condition; young stock are kept shivering in open fields or cold yards, "living" upon the food they receive instead of growing. Horses stand on filthy litter, and ventilation is stopped by plugs of straw. Teams sent to market are kept shivering outside public-houses, whilst the men in charge drink and chat. Disease is promoted, and a veterinary is called in, whose visits are accompanied by long bills.

In all these matters a wise and judicious bailiff may exercise much control, and he should always consider that the responsibility with regard to them rests with him.

The bailiff should carry out orders promptly, and not allow his own ideas to supersede his employer's wishes; at the same time a fear of speech on the part of the bailiff is much to be deprecated. He should be ready with practical advice when he feels it necessary. His authority over the men should never be interfered with, either by the landlord or agent. On the farm he should be supreme, and all orders emanating from any quarter should come through him.

He occupies a place which needs great tact and judgment. He is called upon for help from all quarters of the estate, and often when he feels it impossible to render it. He must, nevertheless, do his best to meet all demands upon him, and he should be allowed such an extra number of horses as may fairly enable him to do so, or be allowed to hire steam for purposes of cultivation, to make up for loss of time.

Labourers.

The labourers upon a home farm should receive the same wages as are paid by the tenants on the estate, and as much work should be expected of them. We do not, of course, imply that, if tenants underpay or in any way oppress their labourers, the landlord should do the same; but there should be as far as possible a reciprocal feeling in this matter. Good labourers should not be attracted by an extra shilling a week, or by any other additional advantage, if the landlord desires to avoid giving ground of unpleasantness between himself and his tenants.

Allotments. They should be well housed, and overcrowding should be strictly forbidden. No lodgers, without permission, should be allowed. At the same time, the labourer's home should, as far as possible, be free from intrusion. He should have a plot of garden-ground, not exceeding a quarter of an acre; an allotment for this purpose should in no case be denied. A field allotment, too, should be allowed to all steady and industrious labourers, provided the area is such as they can tend during their spare hours. This matter has been met by Legislation, but it will doubtless remain a fact that, if the area is increased beyond this point, the allotment will be no longer a boon, but a burden. What is needed to bring about a successful allotment system is a limited area, good soil, proximity to dwelling, and a fair rent.

Subject to the qualification that the landlord, in providing decent house accommodation, should not press for a rent disproportionate to the labourer's wage, the labourer should receive no part of his wages "in kind;" his whole earning should be in money.

Beer. With regard to beer in harvest, our opinion is against giving it. Give money, and let the men supply themselves in accordance with their tastes. Make this proviso, however, if the men club together for the purchase of beer, that the allowance must be under the control of the bailiff.

On estates or farms, however, where beer is brewed at home, it is still a question whether this opinion should not be qualified, for an honest beverage of malt and hops will injure no working man if used in moderation, and will undoubtedly be cheaper than a money equivalent. It must be remembered that beer cannot be given in place of money, that is, it cannot be considered as part of a money bargain.

Taskwork.

As much work as possible should be done by "piece or task work," so that the industrious may have an opportunity of making more money than the idle. This is too often lost sight of. Many a pound is lost by the habit of day pay. Self-interest, so absorbing in all of us, is altogether ignored in our dealings with the labourers. Almost every operation on the farm may be performed by contract, if the bailiff will but give it consideration.

Annual valuation.

Each year, either at Michaelmas or Lady Day, a strict valuation should be made, in accordance with the foregoing section. The landlord must be looked upon, *pro tem.*, as an outgoing tenant. The valuation should be made by the agent in conjunction with the bailiff. By it, an accurate balance for the year can be arrived at, as will be hereafter explained. At the same time it will serve as a check, more especially as relates to live stock. For instance, if 500 sheep are valued in one year, and during the following year 200 lambs are produced, and 150 of one kind and another sold, there should be, at the time of the next valuation, 550 sheep in the flock. If in the valuation this is not the case, a reason should be given.

A system of farm accounts will be given, but we may here mention that a detailed inventory and valuation should be rendered to the landlord, so that he may himself, if he wishes, check the figures.

Supply of produce to the house.

All farm produce supplied to the house should be charged as if sold in the market. Horse labour to the estate must also be charged at so much per horse, say 5*s.* or 6*s.* a horse per day.

Dairy produce should be supplied as "milk," at so much per gallon, say 10*d.* This is generally a better practice than selling to the house milk, cream, and butter. If it is adopted the house itself can sell any surplus quantity.

Milk register.

The cows should be milked into graduated buckets, and the quantity taken each week by the bailiff, and entered quarterly in his journal for inspection by the agent.

A still better plan is to weigh at the time of each milking the milk yielded by each cow, allowing 10lb. to a gallon. This not only enables the bailiff to render a correct account to the house, but enables him to arrive at the exact quantity given during the year by each cow. If the quantity is too low—say below six hundred gallons, the cow should be sold. It is essential that no cow should be retained in the dairy which will not yield a paying quantity of milk.

Corn, hay, and straw for the private stables, mutton, pork, bacon, poultry, and eggs, and any other produce that may be supplied, should be duly entered and charged.

We will now proceed to the consideration, in detail, of those departments which are most prominent. First in importance is:

Live stock. Dairy cows.

The dairy should be near the residence, for two reasons, first, in order that the milk may be delivered with comparatively little trouble, and secondly, that the landlord and his friends may visit it when they feel so disposed. The building should be kept sweet and clean, and the walls and ceiling should be repeatedly lime-washed, as nothing tends more to create purity.

Certificated dairymaid.

In choosing a dairymaid it will be well to require a certificate from one of the recognised dairy schools, as no agricultural branch has made more progress than that of dairying.

The memorandum of dairy rules published by the Royal Agricultural Society should be hung in a prominent place in every dairy.

The food of the cows should be regulated by the bailiff, and the supply be regularly sent to the buildings. The bailiffs should inspect the cows and buildings at least once a day. The hours of milking should be regularly kept, and the cows milked in rotation. The date of taking bull, date of calving, sex of calf, &c., should be duly noted in the cow-man's note book, and a memorandum taken of such events by the bailiff. Registration for such purposes will be remarked upon hereafter.

Calving.

Before calving, the cow should be carefully watched, and kept on dry diet—reasonably limited in quantity. It is chiefly owing to the neglect of this precaution which causes what is known as "drop after calving," or parturient apoplexy.

When calving let nature have her own way whenever practicable. If necessary, however, to interfere, the cow-man should, if possible, communicate with the bailiff. In the event of any illness, apart from this, he must also at once let the bailiff know, who should, if he is fit for his position, be capable of treating all common complaints. Calling in professional aid in every case is to be discouraged. In the event of the bailiff being unable to treat any malady, he should either apply to his principal or the agent. The immediate resort to violent medicines is, as a rule, an error: Nature will often, if left to herself, do more than physic. Dietary also is much to be regarded. Many animals no doubt die from the use of medicines injudiciously applied when simple treatment might have saved them.

Illness and its treatment.

It may be remarked that the knowledge most desirable in bailiffs and stockmen is that which enables them to detect the presence of disease; the treatment of it had better be left to those possessing the necessary professional skill. As before stated, the constant calling in of the veterinary surgeon is to be deprecated, but the failure to do so when needed is equally foolish.

Food.

The best winter food, in our opinion, for dairy cows is good hay (the best that the farm can produce) and crushed oats. The best cream and butter will be produced from this diet. Opinions differ, however, upon this point. Regular food of good quality, ample supply of water, exercise and cleanliness, with regular milking, are the great points necessary in dairy management.*

Fat stock.

Fat stock will need the constant care of the bailiff, more especially in the winter. A good stockman is all-important. He should reside as near as possible to the stalls or boxes, in order that he may visit the beasts the last thing at night. The quantity and quality of the food given are scarcely more important than the regularity and the periods of feeding. A full manger now and an empty one by-and-by will not fatten a bullock. When the bullocks are tied up they will need regular grooming; they cannot get at themselves to lick as they would do in yards or boxes. Before each meal the manger should be emptied and swept, the refuse being carried direct to the pigs, or to other stock, who are less particular. No food should be allowed to accumulate, as it is apt to get sour and distasteful. A constant supply of water must be given. If not supplied to each stall or box, a supply by bucket should be given at least twice a day.

Care and treatment of fat stock.

In the event of any sickness the bailiff should have notice, and after this should be responsible. He should visit the stalls, when in full season, at least twice a day. The supply of food should be regular, and the diet an increasing one, according to the condition of each beast. There must be no set allowance, as bullocks differ much in constitution. The first supply of food should be given about six o'clock in the morning, again at eight or nine; then from twelve to one, four to five, or from that to six,

Hours of feeding.

---

* In naming good hay and crushed oats as a suitable winter food we have, of course, a supply of rich cream and butter in view, such as a country house requires. For farming purposes, pure and simple, a more succulent food will be needed. The hay may be chaffed with straw and mixed with pulped mangold, swedes, or turnips; or mixed with hot linseed gruel or mucilage. Ensilage, sweet or sour, may be used in quantity or in addition to other diet; and probably, as will be hereafter shown, the quantity of milk will be better maintained by this diet than any other. The use of roots often gives a taste to the butter, but this may be prevented by giving the supply to the cows immediately *after* milking.

and, finally, about eight or nine o'clock at night. The cake should be given separately, but meal and chaff should be mixed with pulped roots. No whole fodder should be allowed, as no process is more wasteful. One-third hay and two-thirds straw make a good chaff, and should be cut about 1 or 2½ inches long. Sugar, or molasses, and water, poured hot on the mixture and well mixed, make a palatable diet. It is well to prepare the food a day in advance, as slight fermentation is by no means an objection. Opinions differ as to the hours of feeding, but all will agree as to the advantage of feeding often in small quantities rather than at lengthened periods with full mangers. A gentleman of wide experience has suggested the following hours and diet:—First supply, five to six o'clock, pulped roots and a handful of hay; eleven to twelve o'clock, cake; when this is consumed chaff and meal; finally, at four or five o'clock, a full feed of roots and hay.

Selling of fat stock.

As to the time for selling, it is well to remember that when they reach fair condition they begin to pay for what they eat. A fat beast eats very much less than a lean one. We think the practice of clearing out the stalls early is too often resorted to. A month's feeding towards the end is equal to six weeks at the commencement.

Selling by weight.

Where there are many fat cattle, a weighing machine should be kept on the premises. Periodically the cattle should be weighed, and their weight noted; their progress can then be determined, and, when necessary, their food changed from time to time.

Good ventilation is very important, but the beasts should nevertheless be warm. The use of limewash may be profitably resorted to whenever practicable, and may be applied even to the manger.

Store and young stock.

When on pastures in summer, they will require little attention, beyond a visit once a day. If they are receiving cake, care should be taken to prevent the strongest getting the greater share. This can be done best by allowing a feeding trough to each beast. The feeding place should be changed each day, so as to distribute the manure regularly.

When in the yard in winter, they should have an ample supply of water, and a liberal allowance of food. They will thrive on oat or barley straw and cotton cake, if there is nothing else for them, but a more nutritious diet is better if procurable, especially for very young stock. A fair diet will be 3lb. of best cotton cake, hay and straw chaff without limit, and plenty of water. If possible they should run out once a day, even in winter. Beasts in yards should be carefully selected according to temper and strength. If this is not done, the weak ones are driven from the mangers, and cannot feed. They should not be turned on to the pastures in spring until the growth of grass has fairly started, and should be for the first week or two brought into the yard at night.

Cattle of this kind are not generally subject to much illness. Their maladies are usually simple, and will give way to simple remedies. Change of diet will do more perhaps than anything else. The most prevalent source of disease is cold or chill brought on by exposure and irregular feeding.

Sheep.

It is impossible in a work of this nature to consider so important a subject as sheep with the detail it deserves. We shall simply refer to it in its general bearing upon the management of the "Home Farm."

A thoroughly good shepherd is indispensable, one who will not only carry out instructions, but take an interest in his flock. A shepherd, it will be found, considers his sheep, a bailiff considers his land as well; consequently there is sometimes slight antagonism between the two. The bailiff looks to the general welfare of the farm, and is often obliged to limit the amount of feed, and prevent the shepherd from moving too fast over roots or other crop. A shepherd seldom looks beyond his flock, and thinks but little of the future.

On home farms, as a rule, a considerable flock of fat sheep is required. The supply to the house will vary, according to seasons and the number of visitors; but there must always be a sufficient number. When the supply exceeds the demand, a few may easily be sold to a neighbouring butcher; owing to the nature of the case, therefore, a smaller breeding stock than on other farms of the same size must be kept. Wether lambs also must be kept each season, in addition to the ewe lambs for stock purposes. If the landlord's inclination is for ram breeding, the ram must be put early to the ewes, as early lambs are desirable in order to obtain the necessary growth for service. They must be ready for use in August, so that a month makes a considerable difference in their size and strength.

Ram breeding

A selection of ewes should be made from the whole flock, and a ram placed with them, carefully chosen to make good any marked defect in the flock. It is a good plan to mark the ewes according to the time they take the ram with a No. 1, 2, or 3, in pitch or paint. When the time of lambing arrives, those marked "1" can be taken to the fold at night, and not the whole flock, as must otherwise be the case.

Selection and treatment for exhibition purposes.

The ram and ewe lambs for show, or for any other particular purpose, should be selected early, separated from the flock and fed highly, as early maturity is all-important. As early as possible they should be "trimmed;" this should be done by an experienced lamb trimmer. The wool must be cut closely off the face and back, and snipped more or less all over. This, to gain the necessary show "touch," must be repeated every fortnight. When very high condition is required they must be kept under cover; this has a very marked effect upon the wool. More than the necessary number must be selected in case of deaths, or bad points manifesting themselves later on. Great care in selection is needed, and an experienced man, acquainted with the special breed, should perform this duty.

Lambing.

For ordinary purposes, the lambing should take place in January or February, and in a fold in the open field. The place for the lambing fold should be selected before harvest, and one or two stacks of corn be made on the spot. When these are threshed, they not only form a shelter, but afford the litter requisite for the fold, and thereby double cartage is saved. The food necessary for the flock should be supplied by the bailiff at regular intervals.

The shepherd should be supplied with a comfortable and portable house, fitted with a stove, so that he can prepare gruel or other warm drinks when necessary. It should be fitted with a "bunk," on which he may sleep when he is able. It is a good plan to supply him with coffee or tea. The medicines should be simple and few; a little port wine and tincture of opium for scour, cordials for exhausted ewes, and Epsom salts form the chief.

The chief source of disappointment at lambing often arises from the previous treatment of the ewes. Feeding too freely on turnips is a very constant evil. Ewes heavy in lamb should be limited in this respect. If possible, they should be fed on pastures or old leys, and the turnips carried to them, and these should be pulled some time before they are needed. An ample supply of good hay or other dry food is absolutely necessary.*

After lambing the ewes should be fed liberally, close attention being paid to their milk; when the lamb is weakly, the extra supply should be drawn off; when strong, the diet of the ewe should be increased. The turnips in each fold should be pulled and left to wither for at least a day. The lambs must be allowed free egress to the crop outside the fold, and the ewes should have ample room, and be allowed as much as possible to run back. When the lambs can pick they should have trough food outside.

---

* The best lambing seasons are often those in which the root crop partially or wholly fails.

It is the bailiff's duty to visit the flock at least once every day throughout the year; he should, however, interfere as little as possible with the shepherd. Sheep, when fat, should be killed or sold immediately, and others brought in, as there is great waste in keeping them when they get beyond a certain condition.

Sheep feed.

The bailiff must see that there is a constant supply of food, and this will need great foresight and care. The general rotation of sheep-feed upon hill farms is turnips, swedes, rye, winter-barley, vetches, clover after-math, stubbles, &c., and so on to turnips again. The interval between the completion of the root crop and the second crop of clover has to be got over by catch-crops, *i.e.*, rye, winter-barley, and vetches, and these must be sown in quantities according to the size of the flock, and in accordance also with the rough sheep pasture at hand. The area, however, may be roughly estimated at ten acres to every hundred acres of arable land. When there are pastures, difficulties connected with a short supply may be sometimes overcome, but in this case some night-fold will be necessary. The drawback to catch-crops is in the hindrance to sowing the root crop. It is best, when the last crop of vetches is fed off, if late, to sow a crop of mustard or rape, rather than roots. In all transitions from one class of food to another, care must be taken to accustom the flock to the change before giving them full allowance. If this is neglected, death will often ensue, or purging will take place, which will need immediate attention.

Mangold may be carted to the crops of rye and vetches, and fed off upon them; they are mellow by this time, and are easily eaten by the sheep, so that slicing or pulping may be dispensed with.

Weaning of lambs.

Lambs may be weaned in April or May, according to the season. They should be weaned gradually, *i.e.*, be separated from the ewes for several hours at a time, each day. The process is easily accomplished, as the lambs have learnt for some time to look after themselves.

Washing and shearing. The next process is washing and shearing. This takes place in June; it is unnecessary, however, to detail the practice. Soon after the lambs should be dipped, and later on the ewes may pass through the same process.

Wool. Wool should, as a rule, be sold soon after shearing, as little is gained by keeping it now, although, years ago, a good deal of speculation was rife among farmers in this respect. An experienced woolstapler stated to us a little while ago that no farmer should hold wool beyond September.

Attack of fly. The shepherd too, at this time, must watch carefully for the attack of fly. He should carry a "Mercury stone" in his pocket, and rub the place with it immediately a sheep is struck, which he will easily detect by the uneasy state of the victim. The attack is generally upon the head or flank, and will often prove fatal if the maggots are left undisturbed. In warm, moist weather, and near woods, this attack is most to be dreaded. From this period to September, when the rams are usually placed with ewes, the latter should be kept liberally, as it is a time in which they can hardly be in too high condition. The production of twins is believed to be generally owing to high condition at this period.

Treatment of sheep, however, will depend upon districts, and upon the breed. Some districts and soils are not adapted to breeding purposes; in these cases sheep are bought in, generally about July, and sold when fat. The bailiff must, of course, consider the plan best adapted to the holding, and act accordingly.

Horses. Farm horses are, perhaps, the most valuable portion of a farmer's capital. They are the working power, and if one fails, it cannot but affect the routine of work. Over this department the bailiff will need to exercise great vigilance. The stables and the horses should be carefully inspected each day, and, if possible, morning and night. Where a large number of horses are kept, it is well to have a man responsible for the whole, whose duty it shall be to see that they leave the stable and return to it at the right hour, that they are properly groomed, and the stables perfectly cleansed; to give out the proper amount of food, inspect the harness, and, in fact, take the full charge of the whole stud. Where, however, the numbers will not admit of this, the bailiff himself should act in a similar capacity.

Food.

Regular hours for feeding should be strictly adhered to. The food should be of the best, but economy is most important. We recommend two and a half bushels a week of bruised corn, consisting of two bushels of oats (not less than 36lb. to 40lb. a bushel) and half a bushel of maize; but the quantity should be *measured after bruising*. Mix with this a full allowance of wheat hulls and hay and straw chaff. No rack food should be allowed, and racks should be altogether dispensed with. The waste of hay in farm stables is beyond all belief. Many horse masters at the present time use maize entirely, and consider it a cheaper and better food than oats. This, however, will greatly depend on the price of the two commodities. At the College of Agriculture maize is almost entirely used, and Professor Wrightson speaks highly of it. By some it is crushed, by others soaked, and by others used whole. Experience alone, however, will enable the young farmer to decide his course. In summer, farm horses will require no corn or hay, but will thrive well on green food alone. Trifolium (*Trifolium incarnatum*) should be sown on a clean stubble after harvest, at the rate of 20lb. or 22lb. of seed per acre. This will come to cut in June, and will form the first green diet; this may be followed by a later variety, the white trifolium. Vetches will then be ready, and will be followed by clover and cow-grass.

Health

The health of the animals depends mainly on diet and pure air. When we enter farm stables in the morning and find them reeking with ammonia, until the tears are forced to our eyes, and every hole through which pure air can enter is stuffed with hay or straw, what but disease is to be expected? Greasy heels, from standing in filth, ophthalmia

Ventilation.

from the foul atmosphere, and other complaints from similar causes, are results which need not excite surprise. Whenever possible, lofts over stables should be avoided; when, however, this cannot be dispensed with, the "king-posts" should be cased with boards, forming a chimney, as it were, for the passage of the foul air. Cold air should be allowed to enter from below by moderate apertures, but these must not be immediately opposite any horse, as a blast of direct cold air leads to chill. By this constant circulation caused by the entry of cold air and the exit of hot, the atmosphere is kept pure and unoffensive. The bailiff should, however, see that these wise provisions are not rendered useless by the too frequent plug of hay. Carters, as a rule, dread fresh air and light.

We like to see stables open to the roof, and if the tiles do not fit well, the rafters may be cased for a few feet above the horses. A ridge tile lifted an inch here and there will give perfect ventilation.

Treatment of accidents and diseases.

Accidents and diseases should be at once reported. A horse suffering from any complaint should be removed from the rest. The carter should be allowed under no circumstance to administer any draught or ball, or apply any lotion or liniment without receiving orders from the bailiff.

The stables should be lime-washed as often as practicable, but the wall in front, by the manger, should be toned down with ochre; a white wall is bad for the eyes. The manger should be swept out every day, and the unconsumed food be carried to the pigs.

Oiling and repairing harness.

On wet days the carters can be profitably employed oiling the harness. If this is done, it saves many pounds at the saddler's in the course of a year. No portion of harness should be taken to the saddler's for repair without first submitting it to the bailiff.

Bearing-rein.

One word on the bearing-rein, for there is nothing more painful than to see a team of willing horses pulling with all their strength and will, but chafing under this instrument of cruelty and torture; their heads forced into an unnatural position in order to obtain what is believed to be effect. The natural position for the head, when pulling, is forward, not tucked into the chest; and this fact is now so generally recognised by all intelligent persons who have taken the trouble to consider the question, that to allow the use of the bearing-rein for heavy draught horses is a sure indication that the owner is a person with whom custom has more influence than reason. Therefore make the reins too short to reach the hames, or make it an offence to place them over the collar. But generally carters need nothing but enlightenment upon a point of this kind; for, as a rule, they are kind to their horses, and take pride in them, and this is greatly to be encouraged.

Breeding

If conducted with judgment, breeding is to be encouraged; but if carried out in a promiscuous manner, little or no profit will attach. The aim should be to breed a foal which will develop into a saleable horse or mare—and by the word saleable we mean something more than the miserable demand for inferior colts and fillies at our country fairs and markets. Let the animal be fitted for some special use—for cavalry, high-class carriage or hack purposes, for heavy draught or for London omnibuses, or some other purpose for which a superior and fixed type is needed. The extra price obtainable will make all the difference between a profit and a loss.

Treatment of foals.

In the treatment of foals, great care is needed from their birth. The mares must be allowed an extra supply of corn, as they have not only to work, but supply milk. If the mare suffers, the foal will also.

They should be allowed plenty of exercise, and be taught as early as possible to pick for themselves. They may be allowed a little good meadow hay, bruised oats, and linseed. When weaned, they will require constant attention for a while, and their food should be good and nutritious. If allowed to fall off in condition at this period, it will not be easy to recover it. Crushed or bruised corn is advisable and economical for all horses, but for foals from the period of weaning to five years of age is indispensable. Whilst shedding their teeth they cannot grind a whole oat.

Pigs. This subject will not need much consideration; not that it is unimportant, but particulars as to breeds, feeding, and general treatment have been written too often to need repetition. As a home farm stock, pigs are necessary for the supply of pork and bacon to the house, and opportunity should be given to the various officials and servants on the estate to purchase at first price. Carters who may not be allowed to keep pigs should be supplied slightly (say 2*s*. a score) below the market price.

As a paying stock upon the home farm we do not recommend it; and would encourage only sufficient numbers for the before-mentioned purposes. Our experience has been that 8*s*. per score is needed to cover the expense of pig-feeding. It is often 7*s*. and even less; consequently a loss is the general result. Young pigs sold off the sow will no doubt pay; and a few breeding sows and a boar are necessary. Sows should be in pig, or with pig, as they will not pay under any other circumstances; and when they prove unprofitable in this respect, they should be at once fatted. The piggery may be under the same roof as the fatting bullocks, and be looked after by the stockman; this saves labour and secures regularity.

Pigs should be kept clean, and this is best achieved, now straw is so precious a commodity, by cementing the floors of their sties and keeping them flushed with water. If the floors are of cobble or flint some amount of filth will be retained, no matter how careful the stockman may be, and this will be sufficient to pollute the neighbourhood.

Poultry. A most important stock upon all "home farms." A large supply of eggs and various descriptions of poultry is constantly required in a large country house, and it is the bailiff's duty as well as interest to see that this supply is as regular as possible.

This department where possible, should be left to the bailiff's wife, dairy-maid, or, failing this, to the bailiff's housekeeper. Poultry thrive better as a rule with women than with men. It is not sufficient to keep a large stock and trust to chance for eggs and chickens. It needs care and attention like all other classes of stock. Fowls like liberty, and should be allowed full range, being shut in at night. If fed regularly before roosting time they will invariably come home, and this prevents to a great extent stolen nests and wild broods.

Careful selection of stock birds should be made, and those not considered good enough for the purpose should be killed for the house or sold. Chicken should be hatched more or less throughout the year, to secure a constant supply, and a few good old hens should be kept for that purpose. For layers, however, a good supply of pullets will be needed. In winter, hens may be induced to lay if fed on warm food, which may consist of potatoes and bran.

Whatever class of poultry is kept it should be "pure," and if more than one breed, they should be kept at different homesteads, so as not to intermingle.

Keeping of eggs.

Eggs, when more numerous than are required for immediate consumption, may be kept for a considerable period by simply standing them separately upon a shelf, perforated with holes sufficiently large to take the end of the egg, care being taken to turn each egg daily. The plan of keeping them in a basket or box is bad. The date should be written on each egg, to prevent stale eggs being delivered instead of fresh. If in addition to this plan they are rubbed with fresh butter, they will keep fresh for a length of time.

An account of both eggs and poultry supplied to the house or sold should be rendered quarterly, and duly passed through the books of the farm.

Farmyard manure.

Essential as this substance is, nothing is more wasted or ignored. Farmyards, as a rule, are made apparently expressly for the purpose of destroying the dung made.

The roofs possess no spouting. The yard slopes to the all-important pond. Rain does not simply fall on the dung, but passes through and over it, and then runs full of rich fertilising matter into the said pond. The dung, which has thus become simply rotten straw, is carted at great expense upon the land, the essence being left in the yard or allowed to overflow into the gutter. The tea-leaves, not the tea, have been utilised, and it occurs to no one that this is a wasteful and ridiculous proceeding.

Treatment of farmyard dung, and covered yards.

Our enterprising analytical chemists have written and lectured upon the subject until they must be tired. Our press representatives have written "leaders," but the effect of all this is to render a few yards comparatively perfect, but the bulk remain as they were one hundred years ago. Cattle are fed in stalls, and the dung, rich in manurial matter from consumption of cake, is thrown out into the yards to be washed. Ought this state of things to be? On home farms, certainly not. They are held by the proprietors, and to them the tenants naturally look (to a certain extent) for example. We cannot point out defective yards and leaky dung heaps whilst those upon the home farm are in the same condition. It is of no use at audit dinners dilating upon the subject of covered yards and boxes, unless we can point to a special example upon the home farm. Covered yards, though admirable in their way, are not strictly essential. Warm sheds well spouted are considered by some much better. When, however, covered yards are resorted to, the ventilation should be perfect. One span of roof should project over the other, and spouting be attached only to every other span; the drip from one falling on to the other. This secures a circulation of fresh air.

Dung heaps.

Another matter connected with dung, and which causes great waste, is the removal of it into heaps. If possible it should be carted direct from the yard to the fields and be immediately spread. Every removal causes an escape of ammonia, the chief fertilising matter. When, however, it is necessary to resort to this practice, the carts should be drawn "*over*" the heap, so as to consolidate it, and when completed the top should be covered with mould; a ditch should also be cut round it to prevent the run of surface water, and also to collect the rich liquid which will exude from the heap.

It was considered necessary at one time to turn every heap of dung once or twice before applying it to the land, but this idea is not now so general.

When we consider the ingredients which well-made dung contains, we understand at once the loss which it sustains by soakage. As we have already stated, substances must become soluble before they can be utilised as plant food. This solubility is brought about by fermentation. On this account dung should not be used too fresh, but should be allowed to remain some time in the yard. Nevertheless, if it lies exposed to rain, as it must in open yards, the longer it remains the greater will be the loss of manurial matter. As fermentation proceeds the more soluble the substances become. When covered and unexposed, this process increases its value to a very marked extent, as may be seen by its effect on the crop to which it is applied.

No manure which we can buy will ever rank with good dung. We may buy this and that ingredient, but cannot purchase the useful combination of substances presented to us in this natural fertiliser. If, therefore, we value the progressive fertility of our soils we must continue to make as much as we possibly can, our aim should be to make it with as little cost as possible, and after we have obtained it to prevent waste. This is best done by covered yards, boxes, or open yards well spouted. Liquid manure tanks are very useful and advisable under certain conditions, but the liquid is more useful in the dung, which will hold a large quantity under the foregoing circumstances.

Spreading of dung.

The drawing of manure to the field and leaving it day after day in heaps is also a great source of loss; such fermentation as takes place liberates ammonia, and the rain washes the soluble matter into one spot, instead of equally over the whole field. If possible, dung should be spread as it is deposited from the cart.

To summarise then the foregoing remarks: Make dung where, while it receives sufficient moisture for the purposes of fermentation or putrefaction, it cannot be washed by every rain that falls. If it is exposed to constant rain wash, fermentation ceases; on the other hand, if kept too dry, as under some covered yards, the process is retarded, and the dung becomes dry and mouldy, whereas healthy, well-fermented dung should be black and moist.

Leave it untouched until required for use, every removal being attended with loss.

Spread it quickly. For land where small seeds are to be sown, apply it in autumn, in order that it may become incorporated with the soil. Much good seed, especially swede, is lost by spring application of dung.

If the value of dung wasted annually upon an average sized farm could be reckoned and represented in actual cash, the amount would do more than astonish us.

Artificial manures.

The term artificial manure implies mineral and organic substances artificially prepared and mixed to suit certain crops. It is essential that farmers should ascertain (1) whether the mixture contains the ingredients they require, and (2) whether the price is equivalent to the manurial value. Further, it is important that they should ascertain what their soil contains and what it lacks, so that they may apply only those substances which they really need.

This necessitates analyses of the soil and the manure; and the fee for such will be amply repaid, for there can be no greater loss than that which attends the reckless use of artificial manures. At the same time, the judicious application of the same is not only an act of good husbandry, but is absolutely essential to success.

It has become customary to apply the term artificial to all substances other than farmyard dung; but this is nevertheless incorrect. There are many natural fertilisers

CHAP. VII. *The Home Farm.*

which are only mechanically prepared, such as nitrate of soda, pulverised coprolites, bones, basic cinder, soot, and so forth; also the raw Peruvian guano, and mineral deposits which require little or no preparation, such as salt, kainit, gypsum, and lime.

These all form useful dressings if judiciously applied, and will greatly aid the farmer in producing heavy crops. The artificial manures, correctly so called are mixtures of the above with other more powerful and expensive ingredients, carefully prepared by the use of sulphuric acid and thorough incorporation by machinery. The raw guano, too, is carefully prepared, so that the ammonia it contains is fixed, and other such like processes are carried out to place within reach of the farmer the various ingredients he requires in a fit state for the assimilation by the plant.

In addition to the question of chemical substances which the dressing should contain, it should be in a dry and finely pulverised condition, and free from hard lumps and moisture. The best means to procure all these desirable features is to buy of recognised and trusted manufacturers rather than of local agents, so widely scattered over our markets and rural districts. It would be invidious to name the best manufacturers; but there are many who may be safely relied on.

Then, again, we have waste animal matter, which forms a most important manurial element, and one too much overlooked by our farmers. These waste substances yield ammonia, and may be used for wheat and hops to great advantage. Those which may be obtained at reasonable rates are: Wool waste, shoddy, hair waste, woollen rags, sheep hoofs and trotters, blood manure and fish waste.

All these natural and artificial fertilisers are within reach of the farmer, but should be used by him as an aid rather than as a substitute for farmyard manure. There can, we think, be no doubt that the restricted use of the latter, owing to the high price of straw, and the depressed state of agriculture, has had much to do with the low condition of our arable land. The organic substance yielded by dung is lacking in artificial manures, and this element has more to do with successful agriculture than the farmer is willing to suppose.

After a dressing of manure we naturally sow the seeds; therefore the subject of seeds next presents itself.

Seeds. We are apt, whilst eradicating weeds with one hand, to sow them with the other. We undertake a long and expensive process of fallowing to get rid of weeds, and we buy seeds improperly dressed for our next crop. It is better to buy from well-known seedsmen, even if we pay high for them, than to buy of local men at a low price. As far as vitality goes their seeds are often as good as need be, but they are unable to dress them as carefully as those who make it their special business. These remarks apply principally to small seeds, such as clovers, grasses, and turnips. The two former especially need the greatest care. The latter, if purchased from first-class firms, are known to be from selected varieties. In the ordinary market, however, they are too often taken from a portion of a whole field laid by for seed indiscriminately. If like produces like, we cannot expect success if we adopt this method of buying. Bailiffs, therefore, should, in our opinion, purchase all small seeds of the best firms.

With comparatively little trouble the bailiff may, however, grow his own swedes, mangolds, and turnips. He can select the best bulbs, and transplant them to his garden or elsewhere, and thus secure for his own use the very best seed. By placing the seed in water a short while before use, the immature and weed seeds may be skimmed off. This is, perhaps, one of the best home methods. They will soon dry sufficiently for drilling if spread on a barn floor.

Seeds before being bought should be tried in flower pots or saucers, to ascertain their germinating powers; and be examined by a magnifying glass, and the bulk when supplied should be carefully compared with the sample.

In the selection of large seeds, viz., cereals, vetches, &c., more latitude may be allowed. "Seedsmen" proper do not as a rule supply them. They may be bought in the market; but may to a great extent be grown upon the farm. A change, however, is very desirable; but even this may be effected upon the same farm where the soil varies in any marked degree.

Change of seed.

There is a difference of opinion upon the subject of change of seed; some aver that the change should be from rich to poor soils, some hold the reverse opinion. We, however, believe the best change is effected by the use of seed from soils very similar in character.

Seed in every case should be fully developed, clear and bright in the skin, showing freedom from exposure at harvest time and fermentation in the stack, and of good weight.

Hay.

This is one of the most important matters connected with the operations of the farm, and demands the exercise of care and thought.

Perhaps, of all farm operations, that of hay-making will test the ability of the bailiff more than any other. It is an operation that tries the skill and patience to a marked degree. On home farms, as a rule, a considerable quantity of hay is made, owing principally to the extent of pasture land usually occupied by the proprietor. With regard, however, to excessive hay-making, it is to be observed that it usually comes at a time when every attention on the part of the bailiff is needed to secure a full crop of roots. On most farms the root crop is a most important one, and anything that serves to prevent the attainment of this is to be avoided. It is not an unusual thing to hear that so-and-so has no root crop, when, as a rule, such crops are plentiful. Why is this? Simply because he has made too much hay, and the early season so favourable for sowing the root crop was of short duration. The set-off of extra hay is insufficient to cover the loss sustained.

Early cutting.

In cutting hay the bailiff had better err on the early, rather than on the late side. The grasses contain more nourishment, and if the quantity per acre is less, it is quite balanced by the extra after-math. Moreover, grass, if left too long, wlll ripen its seeds, which tends to impoverish the soil. The practice of leaving it, however, is often pursued by many bailiffs, upon the false hope of obtaining more bottom.

The best plan is to lay up as much land for hay, both of seeds and meadow, as is needed for home use, allowing a sufficient quantity, of course, for the next year, in case of a bad season.

To detail in a work of this character the various processes of hay-making is unnecessary. It may be observed, however, that not only interest but the credit of the estate make it incumbent on the bailiff of a home farm to conduct the operation with the utmost skill he possesses. He will probably be supplied with the latest machinery, and have the command of a great deal of manual labour. In important seasons of this kind, he can generally command the services of men employed in other departments of the estate, in addition to his usual hands. The principal matter to attend to, to secure a good and sweet crop of hay, is to spread it immediately it is cut, but always at night to get it into wind-rows or cocks. The greatest injury takes place after hay is partly made. Whilst the sap is in the grass, and the culms unbroken, rain will run off like water off a duck's back; but when dry and broken it will penetrate and wash out the nutriment.

Upland hay, or clover and sainfoin, as is well known, must be left in the "swathe," and turned when the top is made. The less it is turned the better. In fact, now that the machines lay the swathes so wide and flat, there is often no necessity to turn at all. Many farmers leave it untouched until ready for carting, when they collect it with the horse-rake.

When the ricks are made (which should be near the homesteads), let them be quickly thatched. It is better to run the risk of spoiling hay in the field, than to carry it when unfit. There is a chance of obtaining a good stack in the former instance, but none at all in the latter.

Harvest.

After hay time comes harvest, and often the seasons overlap. The bailiff at this season should have his work on all sides well forward, his men must be well in hand, he must be constantly on the farm, and he must know by careful observation which field is most fit for cutting. The operations of harvest are too often delayed. Both wheat and oats may be cut when comparatively green, and advantage derived by the process. In wheat, under these conditions, the skin or bran is thinner, the quantity of flour is greater, and the straw is more valuable. In oats, too, the effect is similar. Oat straw when harvested early is as valuable as fair hay. If left until all is ripe together, much injury ensues, as that which is cut last is altogether over-ripe. The skin is thick and opaque, and the straw woody, and free from nutriment; and sap has been expended in ripening the grain. The land, too, has been scourged by this ripening process. Both wheat and oats may be cut when, by pressing the grain between the finger and thumb, the inside is found thick, not milky. They will ripen in the stook or shock, if left long enough.

Cutting wheat and oats green.

Cost of harvesting.

As much of this should be performed by task work as possible. Prices, however, will vary in different districts and in accordance with the quantity of the crop. Reaping with sickle—though almost obsolete—may be 10*s.* or 12*s.* per acre. Tying behind machine, 4*s.* to 5*s.* Mowing by hand, 3*s.* or 4*s.*, and so on. Reaping now is usually performed by machine, and is doubtless cheaper, but no machine equals the best hand labour except in the matter of expenditure. Carting and stacking may even be contracted for, but no contract of this kind should be entered into without the full inspection of the bailiff throughout the process. At the present time the "Self-binder" is almost universally used. The machines have become much perfected, and the price is within the reach of most farmers. Though the work may not equal that of manual labour, the saving in money and time is so great that few enterprising farmers will willingly dispense with this adjunct to their working power.

There is an old saying, that "Grain had better spoil in the field than in the stack," and this is perfectly true. As the corn goes into the stack, so it will come out, no matter how long it remains there. Grain often recovers in the field to a very marked extent, when bad weather gives way to sunshine. As a rule, in bad weather the crops are best left alone, only putting up such sheaves as may have been blown down. By constant removal the whole gets exposed to rain instead of only a portion.

Laying down permanent pastures.

After harvest any land intended for laying down to permanent pasture should be carefully prepared. Some assert that no preparation is needed, but that foul land may be sown with a mixture of grass seeds and manured afterwards. Reason, however, and practice point to the reverse of this, and those who would succeed in establishing really good pasture should spare no reasonable expense or trouble in the previous preparation. We have in a somewhat long experience seen no instance in which careless work has resulted in a good and permanent sward. Landlords laying down pastures in their own occupation should certainly spare no pains, as they have not to consider future compensation on quitting. A tenant farmer may be excused for allowing this, to him, important consideration to influence his present action.

The land selected should, if the autumn permits, be cleaned and dressed with farmyard dung; if not it should be ploughed deep, and left until spring, when it should be ploughed again and dressed until the land is both clean and in a fine mechanical condition, but under those conditions artifical manure, well chosen, should be liberally supplied. The seeds may be sown alone, with a thin sowing of oats, rape, or other crop, at the discretion of the sower. The sowing should take place in April, and care be taken that the seeds are all covered, but not too deeply, say from a quarter to half an inch. Surface sowing is seldom attended with success. This is why renovating mixtures sown without previous harrowing so often fail.

Manures.

The previous fertility of the soil is of less consequence than the mechanical condition, because it can be added afterwards by direct application of manure or by the feeding of sheep or cattle with an ample supply of extraneous food. Farmyard manure is no doubt the best if it can be obtained, if not a mixture of mineral manures and ammonia salts may be substituted. Ammonia salts alone, however, should be carefully avoided, as it has been conclusively proved that if persisted in nothing but the hardy and deep-rooted grasses will survive.

To write upon this subject fully in this work is unnecessary, as it has been so thoroughly investigated and made known by the late Sir John Bennet Lawes and Sir J. H. Gilbert in their investigations at Rothamstead. All desiring information should read the various results published by them, visit the experimental plots, and take advantage of the clear exposition so courteously given by Sir J. H. Gilbert.

Seed mixtures.

The seeds should be selected to suit the soil, and the quantity of each kind carefully determined. Each variety should be supplied separately so as to render it possible to detect adulteration, and to test the germinating power. If bought as a mixture this is almost impossible, and the buyer has no alternative but to trust implicitly to the seedsmen. There are many who may be trusted, but they are always willing to supply the varieties separately if desired. It is impossible to give a full list of suitable mixtures, but the following may be taken as examples, and as a guide to beginners :—

MIXTURE FOR DRY CALCAREOUS OR SANDY SOILS.

	lb.
Agrostis vulgaris (Common bent)	1
Poa trivialis (Rough meadow-grass)	2
,, pratensis (Smooth ditto)	2
Alopecurus pratensis (Meadow fox-tail)	2
Phleum pratense (Timothy)	2
Cynosurus cristatus (Crested dog's-tail)	1
Dactylis glomerata (Cock's-foot)	3
Festuca rubra (Creeping fescue)	1
,, duriuscula (Hard fescue)	2
,, ovina (Sheep's fescue)	2
,, pratensis (Meadow fescue)	3
Lolium perenne (Common rye-grass)	6
Avena flavescens (Yellow oat-grass)	1
Anthoxanthum odoratum (Sweet vernal)	2
	30

	lb.
Achillea millefolium (Yarrow)	1
Trifolium minus	2
Onobrychis sativa (Sainfoin)	4
Trifolium repens (Dutch clover)	3
,, hybridum (Alsike clover)	3
Lotus corniculatus (Bird's-foot trefoil)	1
	44

FOR LIGHT OR MEDIUM LOAMS.

	lb.
Alopecurus pratensis (Meadow fox-tail)	2
Anthoxanthum odoratum (Sweet vernal)	1
Avena flavescens (Yellow oat-grass)	1
Dactylis glomerata (Cock's-foot)	5
Phleum pratense (Timothy)	3
Festuca pratensis (Meadow fescue)	3
,, loliacea (Rye-like fescue)	3
,, duriuscula (Hard fescue)	2
Lolium perenne (Improved rye-grass)	6
Poa trivialis (Rough meadow-grass)	2
,, pratensis (Smooth ditto)	2
	30

Chap. VII.
The Home Farm.

	lb.
Onobrychis sativa (Sainfoin, milled)	4
Trifolium repens (Dutch clover)	3
,, pratense perenne (Perennial red clover)	3
,, hybridum (Alsike)	2
Medicago sativa (Lucerne)	2
Achillea millefolium (Yarrow)	1
	45

For Rich Loams and Drained Clays.

	lb.
Dactylis glomerata	3
Phleum pratense	3
Festuca pratensis	4
,, loliacea	2
,, duriuscula	2
Alopecurus pratensis	3
Lolium perenne (improved)	6
Poa trivialis	2
,, pratensis	2
Anthoxanthum odoratum	1
	28

	lb.
Trifolium pratense perenne	4
,, repens	4
,, hybridum	2
Plantago lanceolata	1
Achillea millefolium	1
	40

The following mixture we have recently sown in Ireland on a chocolate loam :—

	lb.
Alopecurus pratensis	2
Anthoxanthum odoratum	½
Festuca duriuscula	1½
,, ovina	1
,, pratensis	2
Lolium per. (improved)	15
Phleum pratense	2
Poa pratensis	1
,, trivialis	1
Cynosurus cristatus	1½
Avena flavescens	1
	28½

	lb.
Trifolium repens	3
„ pratense, per	3
„ hybridum	2
„ minus	2
Achillea millefolium	1
	39½

After treatment of young pastures.

The success or failure of new pastures depends not only on the careful preparation of the ground, the selection of seeds and manures, but also on the after treatment. Too often when once sown little or no care is exercised. Hay is repeatedly taken, and often when fully ripe; heavy stock is put on, sheep allowed to feed close, and manure of any kind is withheld. The result, of course, is a rapid loss of the fine grasses and herbaceous plants, and the survival of the coarse bents. To secure a permanent sward there must be continuous applications of some kind of fertiliser, careful feeding, and only occasional cuttings for hay. We have not endeavoured to treat this matter exhaustively, but only to point out to landlords and their bailiffs that if a permanent pasture is required it must not be left to haphazard management.

Temporary pastures.

In these days of transition and uncertainty some prefer laying down their land to temporary rather than permanent pastures; and there are reasons why, in many instances, the plan is to be recommended. It will generally be followed on those lands which under favourable conditions will repay the cost of cultivation, but which will be benefited by rest. There can be no doubt that a very large amount of stock can be kept in this way, and a large amount of hay made; and, on the other hand, a great saving be effected in both horse and manual labour. It therefore enables the farmer or farming landowner to tide over a period of depression, placing him also in a position to take an immediate advantage of an improved state of

CHAP. VII. *The Home Farm.*

the markets. When this is resorted to the land should be cleaned as for sainfoin, and sown with a mixture somewhat as follows :

	lb.
Lolium perenne (Improved variety of common rye-grass)	7
„ Italicum (Italian rye-grass)	5
Dactylis glomerata (Cock's-foot)	3
Alopecurus pratensis (Meadow fox-tail)	2
Festuca pratensis (Meadow fescue)	2
Trifolium repens (Dutch clover)	2
Trifolium pratense (Broad clover)	2
„ „ perenne (Perennial red clover)	4
„ „ hybridum (Alsike clover)	2

This may, however, be varied to suit periods and soils.

Hop cultivation.

Although hops are grown only to a limited extent and in circumscribed districts, the special cultivation is an important industry which should not be passed by. It is, in a work of this kind, impossible to treat the matter exhaustively, but it will be well to point out how new areas may be planted, and how existing areas may be managed. The planting of hops forms an improvement under the Agricultural Holdings Act of 1900, for which compensation may be sought if the previous consent of the landowner has been obtained. Before making application for the consent of the landlord we must suppose that the tenant has satisfied himself that the land is capable of growing hops of a good quality; and that the landlord has considered the matter from his point of view as to the building of kilns and the payment of compensation at the expiration of the tenancy.

Where hops already exist it is the custom for the tenants to leave the area intact when they quit; but there are some lands which will yield a fair return for some years only, and then require grubbing up and replanting after a period of rest. Some land, by proper management, will continue to grow hops profitably for an unlimited period. It will thus be seen that the landowner must fully consider the adaptability of his soil to the special cultivation before pledging himself in the matter. Without consent a tenant cannot claim compensation for the planting of hops, but may, on the other hand, lay himself open to an action for waste should he proceed to plant without permission.

We shall very briefly consider the subject from a purely practical point of view, and endeavour to assist the landowner and the bailiff by advice in both planting and after management.

The hop plant.

The HOP (*Humulus lupulus*), class and order *Diæcea pentandria* of Linnæus, and natural order *Urticaceæ*. It bears its male and female flowers on different plants, the latter being the hop in question. It is in the form of a catkin, with concave scales enveloping each a single seed. It is perennial and herbaceous. The fruit yields an aromatic bitter, which renders it so valuable for the brewing of beer, no other bitter possessing the same qualities.

Varieties.

There are many varieties, and among the most valuable are the goldings, white bines, green bines, grape, and others. The two former should, with their sub-varieties, form the principal kinds on good land.

Propagation.

The hop is propagated by sets; these are taken from the cuttings in spring, and should be carefully selected both with regard to variety and size. The set must include buds both at top and base. As soon as possible after cutting they should be set out in a nursery about 3in. apart and 1ft. between the rows. They may be transplanted in the following autumn, or, if strong plants are needed, a year later. They may be, and often are, planted in the hop garden direct, but the plan cannot be recommended. There is little trouble in the raising of nursery plants, so that there is no excuse for this now almost obsolete practice.

Soils.

The soils best adapted to the profitable growth of hops are clay loams, with a deep and dry sub-soil, or marls resting on a friable bottom. Sandy and gravelly loams will, under certain conditions, grow heavy crops of inferior hops, but are not adapted to the development of those of high quality.

Aspect, site, and shelter.

Land with a south or south-west aspect will be found the most suitable for the early development of the hop, but the aspect is not of so much importance as shelter. It is clear from the nature of the plant that it must be protected from high winds, especially in the summer and autumn; and as these winds are often from the south-west, it shows that, even if care is exercised in the choice of aspect, equal care must be exercised in the formation of shelter. To so completely hem in the garden as to exclude light and air is not necessary, but it is absolutely essential that the effect of searching winds should be modified. This is best done by planting (or improving existing) hedges. These should be carefully trained to secure height and thickness. Nothing can be better than quick or beech, except in very exposed situations, when belts of fir are, perhaps, preferable.

Gaps and gate-ways should be closed during July, August, and September, with hurdles or some other artificial means, as through such openings great injury is often done.

Preparation for planting.

As a rule no preparation beyond cleaning the ground is required. It is important, however, that creeping grasses of all descriptions should be completely eradicated, as otherwise they will grow among the hills, and it will be impossible afterwards to destroy them. This can best be done by a complete course of husbandry before planting. Where the couch grows in patches only it may be forked out and carefully handpicked. Some trench the ground, but this is a useless expenditure.

The hops are usually planted 6ft. apart and square, so that the whole piece of land should be carefully marked out before planting. This may be done by setting off a line across the middle of the garden, and at every 6ft. (previously marked upon the chain or line with red cloth) a stake or short rod inserted. The line is then crossed by another at right angles, also in the middle of the garden, which should be set out in the same way, beginning at the middle where the intersection takes place. This being done any intelligent labourer can complete the work with the aid of a line, stakes, and 6ft. rod.

Planting.

About October or November, according to season, or, if preferred, in the spring, holes should be dug where the stakes are found. These holes should be 10in. square and 1ft. deep. This process may be done by the day or by task work; if by the latter about 2*s*. per hundred may be given, but this will, of course, vary according to soil. When the holes are ready they should be filled with a previously prepared compost, made of road scrapings, rotten leaves, dung, and such like; and in each hole a small amount of animal refuse, such as wool-waste, shoddy, or fish-waste, or whatever may have been used for the hops, should be added.

In this the plants will be placed, two to each hole, and if weak, three. They should be completely covered with mould, and the stake be again placed in the ground so as to lean over the plants. By-and-by, when they grow, they will take hold of the stakes, and the base of the plant will be kept off the ground, the remainder being allowed to trail the first year.

Between the lines, and each hill, potatoes may be planted in the spring. They not only serve to cultivate and clean the land, but assist in the initial expenses. No exhausting crop, such as cabbage for instance, should be grown.

After management.

In the late autumn of the first year the land should be ploughed with the rest of the hop land, the crown of the furrow being thrown over the young plants. In the early spring this will be ploughed back, the hills opened, and the plants cut. Small and short poles (the waste of the hop land) should then be placed to each hill, and the after cultivation will be the same as that of the established hop gardens. The poling each year should be within the power of the plants, as nothing is more fatal to the crop, whether old or young, than to "over-pole."

Over-poling. The third year the plant should be in full bearing.

Manures. Hops are hungry, hence their name, *Humulus lupulus*, and require heavy dressings of manure, in addition to complete cultivation. The best time for application is in the autumn, soon after the bine of the previous crop has been burnt and the poles stacked for the winter. The usual and best manures are: farmyard dung, wool-waste, shoddy, fur-waste, fish-waste, sheep-hoofs, trotters, woollen rags, or other waste animal refuse. That selected—and it is wise to change the dressings each year—should be applied at the rate of half to one ton per acre, except in the case of farmyard dung, which should be applied at the rate of twenty loads. The cost varies, but from 55*s.* to 90*s.* per ton is a fair estimate.

It should be spread and ploughed in as soon as possible. The money expended in manures during the year may vary from 6*l.* to 7*l.* per acre. It is better, however, on first-class land to err on the extravagant rather than the economical side. In the spring or early summer, say May, June, and July, artificial dressings may be applied, and hoed or shimmed in; but, in very dry seasons, nothing should be applied after June. Artificially prepared animal waste or guano make a good early dressing; and later, nitrate of soda, sulphate of ammonia with dissolved bones, or other such like mixture will be found advantageous. That chosen may be applied at the rate of 4cwt. to 5cwt. per acre.

Monthly labour in hop land. *October and November*, burning old bine, stacking poles, spreading manure, ploughing, and stacking the rotten poles for firewood.

December and January, keeping watercourses and ditches clear. Cutting wood (if any) for charcoal burning.

February and March, ploughing back, digging and cutting, that is, digging the land between the hills which the plough cannot reach, exposing the crown of the plant and cutting off the old growth. This latter operation, that is, digging and cutting, will cost from 11*s.* to 12*s.* per acre.

April and May, throwing the stacks, carrying out the poles, and laying two beside each hill (or three if that number is the custom). This will cost 5*s.* per acre. Putting up, 6*s.* to 7*s.* per acre. This is done by making holes close to the hills with a heavy crowbar with a cross handle, and with one vigorous thrust inserting the pole. They should be previously pointed with a square-cut point, which gives them a firm hold. Poles are pointed by the hundred, at a cost of from 5*d.* to 6*d.*

June, tying the bine to the poles should take place as soon as the young shoots are long enough. This is done by women, who place two bines to each pole, tying them with some material which will rot off before the end of the season, such as rushes, crocus leaves, or bast. If string or other imperishable substance is used the bine will not clear from the poles after gathering.

The purple bine, a luxuriant early growth, should not be placed against the poles, but pulled off. The price for tying is usually 10*s.* an acre.

As soon as possible after tying the shims (small cultivators) should be run through the lines, and crossed, as deeply as possible. The first shimming will require two horses, but afterwards one will suffice. The next process is to ring or beck round the hills where the plough has not reached. This will cost 4*s.* an acre.

July, the growth on each hill not tied to the poles should be cut off, this is done by the women, and carried out also by them. Sometimes 1*s.* an acre extra is given for this, but it really forms part of the tying contract. This being done each plant should be hilled, that is, the earth should be drawn up round each hill with a large flat hoe. The cost of this operation is about 4*s.* an acre.

August, during this month, and until the crop is ripe, shimming should be as constant as the weather will permit, and as the growth of bine will allow; and where this is so luxuriant as to forbid horses the flat hoe must be used freely. The ground cannot be too constantly or too deeply stirred, and it is the neglect of this that often defeats the hop grower's efforts.

Picking

September, usually the hops are ready for gathering early in this month. Their fitness is shown by the state of the flowers; the scales become firm to the touch, and return to their position when pressed by the fingers. The lowest scale protrudes somewhat, which is called by the hop grower "putting out the tongue," the seeds inclosed by the scales become firm, and the bunches of hops rustle audibly when shaken.

There is a nicety in this determination which can only be gathered by practical experience, but we advise beginners to commence early rather than late, so as to obtain colour. If too early, however, the scales are thin and without substance. The highest price is obtained for those hops which possess both colour and quality, but as the process of picking continues over a long period the quality necessarily varies greatly.

The process of picking must be regular and constant when it has commenced, and the bailiff or hop grower must so arrange that he picks during the day exactly what the kilns will dry. If he exceeds this quantity he will be obliged to call off the pickers, who will be idle for the remainder of the day, which invariably causes ill-feeling and discontent.

It will require judgment in employing the exact number of hands; those employed draw lots for places, and those places they will keep throughout the period. The frames and cloths or baskets are found by the hop grower. The poles are pulled by men employed for the purpose, who supply each frame as they are required. The hops are then picked into the frames or baskets, and the stripped poles thrown into piles on the opposite side. This goes on until the foreman considers he has gathered his quantity, when the pickers are called off by the words "no more poles." They then gather what remain and pick over the hops in their frames, throwing out leaves, and picking the bunches which may have fallen in. The pole-pullers then proceed to measure the contents of each frame with bushel baskets, from which they place them into garden bags held by two men. A tally is kept by the foreman, and the number set down to the account of each picker. After measuring, the process is repeated until they are called off again in the evening. The evening measure should be commenced at alternate ends each day, so as to allow the pickers to leave early in turn.

Drying. The garden bags being filled are drawn to the kiln as quickly as possible, and given into the charge of the drier.

The kilns vary both in size and construction, but, roughly speaking, a hair to hold 200 bushels will be required for each ten acres. The hair, so called, is a cloth made of horsehair stretched over an iron frame placed sixteen to eighteen feet above the furnaces. The garden bags are emptied on this and spread to a depth of a foot and a half or thereabouts. The fires are then made up and the heat gradually raised to a temperature of 130° to 160° Fahr. **Fuel.** The fuel consists of charcoal and anthracite coal, and the former should preponderate if obtainable.

Brimstone. About one hour after the fires are made up brimstone should be applied; the quantity will vary with the state of the hops, but it is quite impossible to name any reliable figure. The learner must acquire this knowledge for himself in the kiln. It is used in the solid form, and placed upon a clear fire all at once, and should not be repeated. The object is to bleach the hop, and to give the sample the desired colour. Great care must be exercised for if too much is used the whole will be spoilt.

Period required for drying. It will require about ten hours, more or less, according to the state of the hops, to dry one lot, so that two lots may be put on, dried, and taken off in the twenty-four hours. During the process of drying they should be turned once or twice; this is done by walking through them with a shuffling, pushing stride, and not by treading, as this will press the hops against the bottom, and cause them to burn.

Cooling.

When taken off the kiln the hops will be allowed to cool on the cooling floor, and when this has been done they will be heaped up with the rest, and will be ready for bagging. Care should be taken not to bag too soon.

Bagging.

The next process is bagging. The bags, or pockets as they are usually called, are made of a strong material, manufactured specially for the purpose. In the Country districts they are usually made to hold two hundredweight, but in Kent they are smaller, and hold about one and a half hundredweight. Each pocket is marked with bold letters, as follows—the name of the grower and place where grown, the weight, number of pocket, the year, and a crest or trade mark.

Selling.

The pressing is now invariably conducted by machinery, and a two hundredweight pocket will hold about one hundred and seventy bushels. When bagged they are each weighed and marked, and are ready for sale, which may be conducted through factors, who work by commission, or sold privately. The price varies so greatly that it is impossible to make any reliable quotation; on referring, however, to our ledger we find the following :—

	£	*s.*	*d.*		£	*s.*	*d.*	
1873	6	0	0	to	7	10	0	per cwt.
1875	4	0	0	„	5	0	0	„
1876	9	0	0	„	11	0	0	„
1886	3	0	0	„	4	0	0	„
1887	4	0	0	„	5	0	0	„

There were, however, between 1876 and 1886, when the hop land was let, some higher prices, even reaching 20*l.* per cwt.

Rent of hop land.

The rent of hop land, of course, varies greatly, and has fallen considerably during the years of depression, but it may be quoted at from three pounds to five pounds an acre.

CHAP. VII.
The Home Farm.

Cost of cultivation.

The cost of cultivating hops varies from, say, twenty-five to forty pounds an acre. The Country hop grounds may be worked well for twenty-five to thirty pounds, and the Farnham hop lands for thirty to forty pounds. This expenditure may be detailed as follows :—

		£	*s.*	*d.*		£	*s.*	*d.*	
Cultivation, per acre,	from	4	0	0	to	5	0	0	
Poles, annual renewal	,,	3	0	0	,,	3	10	0	
Manures	,,	6	0	0	,,	7	0	0	
Rent	,,	3	0	0	,,	5	0	0	
Rates, tithes, &c.......	,,	1	0	0	,,	2	0	0	
*Picking and drying...	,,	1	10	0	,,	1	15	0	per cwt.

The enemies of the hop plant.

During growth the hop plant is subject to many attacks from injurious insects and parasitic fungi. For full information on the former, we recommend the reader to refer to the "Reports on Insects injurious to Hop Plants," prepared by C. Whitehead, Esq., F.L.S., F.G.S., for the Agricultural Department of the Privy Council; and to the valuable "Manual of Injurious Insects," by Miss E. A. Ormerod. Amongst these are: (1) The Green Fly or Aphis (*Aphis humuli*); (2) The Hop Bug (*Lygus umbellatarum*); (3) the Hop Flea (*Haltica concinna*); (4) the Hop Dog, Caterpillar of Pale Tussock Moth (*Dasychira pudibunda*); (5) the Otter Moth (*Hepialus humuli*); (6) the Red Spider (*Tetranychus telarius*); (7) the Hop Wire-worm, Larva of Striped Click-beetle (*Elater lineatus*).

Among the latter are the mildews. These are known as *mould;* and on some lands, and in certain conditions of the atmosphere, its presence causes great loss. The mildews are myceloid growths on the surface of leaves and fruits, and injure them by abstracting their juices and by choking up the pores.

It does not seem necessary to enter fully into the life

---

* The average growth on about fifty acres of Farnham hop land from 1859 to 1882 was 8cwt. per acre.

I am indebted to Mr J. A. Eggar, of Farnham, for the basis of the figures here quoted history of these pests, as the whole matter has been already so fully dealt with by our most capable and learned naturalists; but it may be well to briefly describe the methods for preventing and combating the evils when they arise. With regard to the Green Fly we have little or no control over its attack, but we may by judicious management do much to ward off its injurious effects. The natural enemies to this insect are the aphis-eating birds, and the "Lady-birds" (*Coccinellidæ*). The latter, especially in the larval stage, feed voraciously on the aphides. Mechanically, we may wash off the lice, that is, the young, or larvæ, before they have had time to exhaust the plants by the abstraction of the juices; but it is an expensive method. This is done by using a wash composed of soft soap and water, to which is added some tobacco juice, or a concoction of bitter aloes and tobacco, applied by a machine made for the purpose, to the under side of the leaves. The cost of this operation varies from thirty to thirty-five shillings an acre each time it is done.

Green Fly.

Another method, and one which should accompany the other, is to stimulate the growth of the plant by direct manuring and by constant husbandry.

The great object is to keep in view the health of the plant, as the aphides only seriously attack the plant when the flow of sap is sluggish. East winds and cold nights check the growth, which under favourable conditions is very rapid, and when in this state the attack of the aphides is to be most dreaded.

Hop Bug.

The Hop Bug attacks the plant by inserting its sharp sucker into the bine, leaves, and young shoots, and injuring the tissues of the plant, which interferes with the regular flow of sap. Prevention in this case is possible, and is preferable to cure. The best course is to keep the hedges and banks carefully trimmed, the edges of the gardens, where the plough does not reach, pared and dug, and all rubbish burnt. The plant-bugs in autumn and winter are found about the tufts of grass and rubbish, and if all this is destroyed the attack in spring is less likely to occur.

Hop Flea. The Hop Flea attacks the young shoots as soon as they appear above ground, and in some seasons are very destructive. The flea-beetles hibernate in the perfect state in the ground close to the hop hills, in the hollow bine and rubbish, and in the *débris* lying in and about the gardens. In the early spring they emerge from their hiding-places and attack the young shoots immediately they appear. This attack may be also to a great extent prevented by careful husbandry; and we have ourselves found, after carefully cleaning the banks and ditches, and burning all rubbish regularly each year, that the attack has been minimised.

The remedy is to keep the ground constantly moved, and to beck round the hills, dusting the young bine as much as possible at the same time. When the young bine is long enough to tie to the pole the danger to a great extent is over. Sometimes the perforation of the leaves by this pest is so complete as to prevent them performing their functions.

Red Spider. The Red Spider, so-called, though not a spider at all, but a "spinning mite," does great injury in hot and dry seasons. The effect produced by the attack of this pest is known as the "fire-blast," because the leaves become brown and red, and shrivel up as if burnt. The result is, sometimes, the complete loss of the crop. We can suggest no remedy, as the attack usually takes place when the hop is developing; but as the red spider shelters itself in winter beneath clods and stones, it, too, may be to some extent exterminated by careful husbandry.

Wire-worm. The Wire-worm is very destructive, and is found more or less in most hop lands, but in some it is very prevaleut and persistent. Good and complete husbandry will do more than anything else to check the depredations of this universal pest. A dressing of rape cake round the hills attracts the wire-worms to the surface, when they may be hand-gathered and destroyed.

On lands where the attack is constant it is a wise plan to dress heavily with lime, say, to the extent of 80 to 160 bushels to the acre. On newly-planted lands the attack is often so persistent as to render renewal necessary for some years.

Mildew.

Mildew is much dreaded by the hop grower, and where the bine is rank and luxuriant, and the garden sheltered from winds, the attack becomes serious in damp and warm seasons. In a rainy season, when the temperature is low, ill-effects are to some extent prevented. It shows itself generally in July and August, and first by white flocculent blotches on the leaves, which, when the attack is persistent, spread to the fruit itself. The remedies are good and continuous husbandry, and the dusting with flowers of sulphur in early mornings when the dew is on. This pest alone is sufficient to destroy the prospects of the grower, and is feared perhaps more than any other.

In conclusion, it will be noted that good husbandry is mentioned as the best preventive and cure for all the attacks named; and probably no cultivated plant repays careful husbandry better than the hop. Careless and haphazard management almost invariably results in failure, while constant cultivation, almost up to the day of picking, will often turn the tide of adversity into one of prosperity.

Ensilage

It does not seem necessary to enter minutely into the subject of the making of ensilage. It is no longer in its infancy, and able expounders of the system have made known very widely the secrets of its manufacture. Ensilage is now a recognised food, and the great advantage which has been gained by its introduction is that farmers are rendered independent of weather. It is not intended to supersede hay, and there is no reason why the two substances should be compared. Good hay will still be the favourite feeding commodity, but good ensilage will be found preferable to washed out or mouldy hay.

In our uncertain climate haymaking is almost invariably attended with much care and anxiety, and this anxiety has been much lessened by the knowledge that, if rain and dull weather is persistent, such an excellent substitute may be made. The farmer, however, must make up his mind early, and not waver too long, for injured hay cannot be made into ensilage.

A great drawback to the making of ensilage has been removed by showing that expensively constructed silos are not required. All that is required is to so arrange the green fodder that a pressure can be exerted during the process of making, and a continuous pressure applied afterwards. If this is done, the silage will be as good if made above or below ground. Every farmer has the means, without expenditure of capital, of making a good ensilage; and, if this is made known far and wide, the process will largely and rapidly extend itself.

The mow of a barn, a cart shed, a hole dug in a dry soil, or a simple stack will do; all that is required in each case is to build it up by degrees and press it thoroughly, and to protect it from weather when finished. For continuous pressure, when completed, anything heavy and readily movable will do—bags of salt, boxes of flints, old iron, boulders, blocks of timber, bricks, sand, or earth.

One great advantage which ensilage has over hay is, that it may be made of any waste herbage, such as hedge trimmings, roadside cuttings, trimmings of banks, and so forth. By this means a large amount of useful food may be stored up which has been hitherto wasted or destroyed, and either more stock may be kept or more hay sold. It may go hand-in-hand with haymaking in dry seasons, and take its place altogether in wet.

Crops suitable.

All fodder crops may be used, such as clover, vetches, Indian corn, sorghum, grass, and green cereals.

If made in a silo, the fodder may be put in whole or chaffed, but if in a stack it must be whole. It should be cut when dry—that is, when there is neither rain nor dew upon it, and be carted away at once. Some say it may be carted to the silo or stack in wet weather, and we have often seen it done when the water runs out of the cart; but sour ensilage will result from this process.

Pressure.

During the building of the stack, or filling of the silo, heavy and constant pressure must be used. This can be done by the treading of men or horses, or by rolling, care being taken to tread or beat it well at the sides.

If a stack is resorted to, a movable rail or rope should be run round it, so that the men may hold on whilst they tread.

The building or filling should be gradual, say six feet at a time, and, after thoroughly pressing, it may be left for three or four days; then another similar quantity may be added and the pressure repeated, and so on until completed, each quantity acting as a weight to that below it. If this is carefully attended to, continuous after pressure will not be so necessary, although it should not be neglected.

Spreading.

Another great point to bear in mind is the careful spreading of each lot; it should not be thrown on in lumps.

Amount of pressure.

The continuous pressure may be exerted, as already stated, in any way most convenient to the farmer, but should be so regulated as to give from one hundred pounds to one hundred and fifty pounds per square foot of surface.

Temperature.

If sweet ensilage is desired the temperature should be allowed to rise to 140° Fahr. when first made, as this destroys the vitality of all putrescent germs; it may then be allowed to cool to 120°, and afterwards complete pressure may be exerted. The temperature can be nicely regulated by pressure—to increase, reduce pressure, and *vice versâ*.

Feeding.

The feeding of ensilage is an important point, and much disappointment will follow if a few simple rules are not followed. If cut out and exposed for any length of time it becomes offensive, therefore only sufficient for immediate consumption should be taken from the silo or stack at one time. All racks or mangers in which silage may be placed should be cleaned out as soon as the cattle leave the stalls, and in the case of milch cattle none should be given until after milking, and until after the milk has been removed to the dairy. Powdered gypsum should be kept near, and some spread every morning over the whole floor and mangers of the feeding stalls.

If these simple rules are neglected the milk will assuredly be affected.

Ensilage should be used as an aid to other feeding stuffs, and not as a substitute. When roots are scarce it will be found most useful, as it has been proved that milk is maintainable in winter with an ample supply of ensilage better than with a full supply of roots and hay.

We have in our own experience known a large number of heifers successfully fattened on a full quantity of ensilage, supplemented only with maize and cake.

Cost of making.

The cost of making will, of course, vary according to circumstances, but may be taken at from five to seven shillings per ton. A cubic foot will weigh about 56lb. if sweet, and 48lb. if sour. Therefore from 40 to 46 cubic feet will weigh one ton.

Weight of ensilage.

Useful rules.

The following points should be borne in mind by those intending to make and use ensilage :—

(1.) Cut when succulent, and not when too matured.

(2.) If siloed, put in whole or chopped as preferred.

(3.) If stacked, let the outside be cut close with a hay-knife when finished.

(4.) Let the pressure be constant when in progress, especially at the outsides if in a silo.

(5.) When completed exert a regular and continuous pressure of from 100lb. to 150lb. to the square foot of surface.

(6.) To make sweet ensilage, let the fodder be cut and carted in when free from rain-water or dew, and let the temperature rise to 140° Fahr. during the early stages. Afterwards increase the pressure.

(7.) To make sour ensilage, cut and cart the fodder when wet, and exert pressure at once.

(8.) When required for feeding cut only what is wanted for immediate use, and do not relax pressure.

(9.) Clear away refuse immediately after feeding.

(10.) Do not feed with ensilage until after milking, and until the milk has been removed.

(11.) Let the ensilage be used in conjunction with other commodities, and not as a substitute.

(12.) Make all inferior herbage into ensilage; all that is really good into hay, if weather permits.

IMPLEMENTS.

Implements.

These are important items upon all farms, more especially upon home farms, where expensive machinery is often employed. The amount of money required to set up a farm in a complete set of implements is very great, and no portion of the farmer's capital is so exposed to depreciation, not only from wear and tear, but from the fact of old implements being pushed aside by new methods and patents. Fully 10 to 12 per cent. ought to be deducted each year when the valuations are made.

Care of implements.

This natural depreciation is often increased and hastened by the carelessness of the bailiff and his men. Expensive machinery is left constantly exposed to all weathers. Sun and wet, one as injurious as the other, are allowed to work their will. Elevators especially suffer much from this neglect; they possess so much surface, lie so exposed, and, being very large, cannot easily be covered. When not in use they should be drawn at once to a shed or into a barn.

Reaping machines, also, are constantly seen, week after week, in the field where last used.

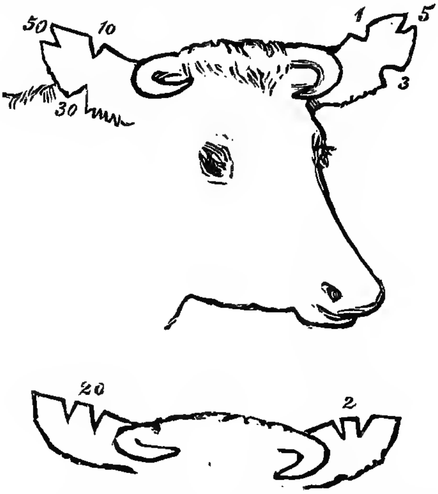
Chap. VII.
The Home Farm.

It answers to keep implements in constant repair. A coat of paint yearly is money and labour well expended.

All repairs should be attended to in their proper seasons. When the wheat is fit to cut or the grass ready for mowing, it is too late to think of sending the machine to be repaired. On estates, all repairs should be, as much as possible, placed in the hands of the clerk of the works, and no machine should be sent away without his sanction.

Registration of cattle.

The following sketch is from an engraving that appeared some time ago in the "Agricultural Gazette," and is inserted here by the kind permission of the Editor. Requiring a method for distinguishing cattle for purposes of registration, we applied for the necessary information to the ever-courteous Editor of the "Agricultural Gazette" (the late and lamented Mr. J. C. Morton), who thereupon published this drawing.



Ear-Marking of Cattle, for Purposes of Registration.

The system is that practised at Aylesby, as slightly altered by Mr. Torr from the original system at Wiseton.

By adding together the figures represented by each clip, any number up to 99 may be obtained, except 2 and 7 or 20 and 70; and to form these a second clip is cut by the side of the 1 and the 10, as shown on the ears below.

We have found the system an admirable one, and recommend it to those who have the care of a pure herd of cattle.

This matter of registration is better conducted by the agent than by the bailiff, as it requires careful entries and selection. Messrs. Hallifax and Co., of Oxford-street, furnish a very excellent private "Herd Book" for entries, for the sum of 7*s*. 6*d*. From this book the forms are filled up for presentation to the secretary of the shorthorn or other herd books.*

TOP-DRESSING EXPERIMENTS UPON GRASS LANDS.

Top-dressing experiments on grass land.

A table is given on the next page, showing the result of some experimental dressings upon grass land, the object of the experiments having been to obtain information concerning the effect, over an extended period, of various artificial and natural manures.

The grass land chosen was a naturally poor one in Hampshire. The soil, which was examined by the late Dr. Voelcker previous to the experiment, was found to contain no lime, except such as remained from a dressing of chalk applied nearly thirty years before. It was a porous clay resting upon chalk. Care was taken that each plot should be as nearly as possible of the same quality.

The manures were applied in the month of January, 1875, this month being considered best for the purpose. The results were carefully noticed when the plots were cut in July, the weight of each being taken as soon as cut.

---

* Since 1882 (the date of the second edition of this work) the author has had repeatedly to take advantage of this method of registration, and has found it work admirably.

TOP-DRESSING EXPERIMENTS ON GRASS LAND, SHOWING THE RELATIVE EFFICACY OF VARIOUS ARTIFICIAL AND NATURAL DRESSINGS.

Plots One-tenth of an Acre. Manure applied January 20th, 1875.

				GRASS CUT JULY 31ST, 1875, SHOWING THE AMOUNT ATTRIBUTABLE TO THE DRESSINGS AT THE FIRST YEAR'S CUTTING.			GRASS CUT JULY 21ST, 1876, SHOWING THE AMOUNT ATTRIBUTABLE TO THE DRESSINGS AT THE SECOND YEAR'S CUTTING			GRASS CUT AUGUST 2ND, 1877, SHOWING THE AMOUNT ATTRIBUTABLE TO THE DRESSINGS AT THE THIRD YEAR'S CUTTING.		
No. of Plots	Description of Manure.	Quantity of Manure per plot of One-tenth of an Acre.	Cost of Manure per acre.	Weight of Grass per Plot.	Increase per plot over average of Un-manured Plots.	Decrease per Plot.	Weight of Grass per Plot.	Increase per Plot over average of Un-manured Plots.	Decrease per Plot.	Weight of Grass per Plot.	Increase per Plot over average of Un-manured Plots.	Decrease per Plot
		lb.	£ s. d.	cwt. qr. lb.	cwt. qr. lb.	cwt. qr. lb.	cwt qr. lb.	cwt. qr. lb.	cwt. qr. lb.	cwt. qr. lb.	cwt. qr. lb.	cwt. qr. lb.
1	Peruvian Guano ...	45	3 0 0	18 2 12	7 1 3	...	8 0 2	2 1 8	...	11 2 24	3 3 22	...
2	Soluble Guano	45	2 10 0	17 2 23	6 1 14	...	7 1 7	1 2 13	...	10 2 16	2 3 16	...
3	Soluble Guano ... ... Superphosphate ...	33½ 22½	2 9 6	16 1 3	4 3 22	...	7 2 12	1 3 18	...	9 1 21	1 2 19	...
4	Superphosphate ...	45	1 4 0	14 2 10	3 1 1	...	6 2 24	1 0 2	...	9 0 26	1 1 24	...
5	Nothing	...	...	11 1 18	...	...	5 2 23	...	...	7 3 17	...	...
6	Fine Bone Dust ...	67	2 17 0	12 2 7	1 0 26	...	6 2 9	0 3 15	...	9 0 19	1 1 17	...
7	Superphosphate ... Nitrate of Soda... ...	22½ 22½	2 2 0	14 1 11	3 0 5	...	5 3 24	0 1 2	...	6 0 0	0 0 26	...
8	Superphosphate ... Kainit ... ... Nitrate of Soda... ...	22½ 22½ 22½	2 9 0	15 2 7	4 0 26	...	5 2 9	...	0 0 13	7 3 3	0 0 1	...
9	Soluble Guano ... ... Nitrate of Soda... ... Superphosphate ...	33½ 11 11	2 18 6	15 1 20	4 0 11	...	6 0 14	0 1 20	...	8 0 9	0 1 6	...
10	Nothing	...	...	11 1 0	...	...	5 2 22	...	...	7 2 16	...	...
11	Dissolved Bones ..	56	1 17 6	12 2 7	1 0 26	...	6 0 15	0 1 20	...	7 1 0	...	0 2 2
12	Dissolved Bones ... Soluble Guano	56 28	3 8 9	13 1 18	2 0 [illegible]	...	5 3 20	0 0 18	...	8 0 0	0 0 26	...
13	Special Grass Manure	56	2 0 0	13 0 20	1 3 11	...	5 2 2	...	0 0 20	7 0 14	...	0 2 16
14	½-in. Bones...	56	2 7 6	10 1 27	...	0 3 10	5 3 14	0 0 20	...	8 0 14	0 1 12	...
15	Farmyard Manure ...	1 load	2 10 0	15 0 18	3 3 9	...	7 2 7	1 3 13	...	11 3 7	4 0 5	...

⁂ The first ten of these Experiments were conducted under the directions of the late Dr. AUG. VOELCKER, F.R.S

CHAP. VII. *The Home Farm.*

All were cut the same day, no rain or other change occurring during the operation. As will be noticed, these results were rather peculiar.

The next year was hot and dry, and the yield of grass was much less than the previous year; nevertheless, there still remained a marked difference in favour of several of the manured plots. The third year again gave a heavy yield of grass, and still the dressings showed a return, and a return in some degree proportionate to the last.

It will be observed that the most effective dressings were Peruvian guano, soluble guano, and farmyard manure. The plots dressed with nitrate of soda exhibited a considerable increase the first year; not, however, to such an extent as the guano; but the following year the effect was not only reduced to a minimum, but in one case to a decrease showing the transient value of the very soluble nitrate.

Another very peculiar result is the loss upon the plot dressed with ½in. bone the first year, and the very slight increase the second and third.

The table, however, is clear, and open to criticism; it shows that in plots 1, 2, and 15 there is a decided residuum left even after three successive cuttings. If this residuum could be arrived at, we should obtain the "unexhausted value;" but this is impossible, because such value is that which remains after each successive trial; we can only, therefore, from the results of the preceding years, come to a conclusion as to the amount of grass attributable each year to the previous dressings.

With regard to the pecuniary result: if we take, for instance, plot 1, we find Peruvian guano, at a cost of 3*l.* per acre, gives an increased yield of 6½ tons of grass in the three years; say, in rough figures, 1½ tons of hay, which at 70*s.* per ton represents 5*l.* 5*s.* as a return for an outlay of 3*l.*, which may be considered a good investment.

It is therefore clear that an incoming tenant may pay a sum of money to the outgoing tenant as an equivalent for money so wisely invested.

These experiments must not, however, be confounded with similar ones conducted upon arable land, as the results would be widely different.

In the year 1879 these experiments were followed by others, with a view to show the efficacy of cheap natural fertilisers. The results cannot fail to be interesting, especially at this period, when farmers' capital has so much diminished.

The soil was a porous, self-drained clay, containing little or no lime, and the dressings were sown on the 17th day of March, and the plots cut and weighed on the 16th day of August, 1879.

On referring to the following table, it will be found that gypsum, at a cost of 6*s*. 3*d*. per acre, gave a return of 643lb. of grass over the plot unmanured, or a return of 6430lb. per acre—a most extraordinary result.

1879.						*1880.	
No. of Plots.	Description of Manure.	Quantity of Manure per Acre.	Cost of Manure per Acre.	Increase per Plot in excess of Plot Unmanured.	Decrease per Plot.	Increase per Plot in excess of Plot Unmanured.	Decrease per Plot.
				lb.		lb.	lb.
1	Cut Straw ...	150 bushels.	about 10*s*.	255		78	...
2	Nothing	...	...	...		...	...
3	Salt	5 cwt.	6*s*. 8*d*.	265		...	49
4	Gypsum......	5 ,,	6*s*. 3*d*.	643		111	...
5	Kainit	5 ,	8*s*. to 10*s*.	548		157	...

* These results show the effect of the applications the second year. The plots were not re-dressed.

These plots were again weighed in 1880, and gave a yield in favour of cut straw, gypsum, and kainit, as will be seen on reference to the table.

The result, then, of these experiments shows that, for the outlay of 6*s*. 3*d*. in gypsum, an increased yield of grass was obtained of 7540lb. per acre in two years.

CHAP. VII.
The Home Farm.

Too much weight cannot be attached to this interesting experiment, and we hope it will lead to the use of cheap fertilisers, wherever practicable, in place of those expensive mixtures so highly advocated by those interested in their production.*

---

* Many valuable experiments have been made since these, by well-known and careful men, but nothing to refute the conclusions arrived at here have resulted. It is now a recognised fact that pasture land is much benefited by liberal dressings of farmyard manure, and natural and artificial fertilisers; and all that seems necessary is to select those which will promote a large yield and encourage the finer grasses and herbaceous plants.

CHAPTER VIII.

REPAIRS, BUILDING, AND MATERIAL.

REPAIRS GENERALLY—CLERK OF THE WORKS—NEW ERECTIONS—FARM BUILDINGS—TANKS—COTTAGES—MATERIAL—TIMBER—MINERAL SUBSTANCES—UTILITY OF GEOLOGICAL KNOWLEDGE—GRANITE—SLATES—TRAP, OR GREENSTONE—SANDSTONE—LIMESTONE—MALM ROCK—CHALK AND LIME—SAND—MORTAR—CEMENT—CONCRETE—BRICKS AND BRICKMAKING—TILES.

Repairs generally.

Clerk of the works.

THE maintenance of farm and other buildings in such repair as will enable a full rental to be secured is the first object of all agents. The wear and tear and natural decay are so great that, on estates of any magnitude, a complete staff of skilled workmen is required. Those men are under the direction of a foreman, himself a skilled mechanic, styled the "clerk of the works." He should be a man of ability, able, by a complete training, to undertake anything relating to building and repairs. To thoroughly fill his position he must have passed through an apprenticeship, both at the bench, the mortar-board, and the draughtsman's table. He will be required to provide plans and elevations with their accompanying specifications and estimates, superintend the preparation of the various materials, and be methodical and self reliant.

The average annual amount of repairs upon an estate will depend upon the description of the buildings. When they are built of permanent material, the necessary repairs will be superficial and easily kept pace with; when, however, they consist of wood, thatch, or other perishable material, the expense will be constant and heavy. So absolutely necessary are repairs, to maintain a regular income from the land, that the matter is recognised in all valuations for purposes of assessment as a subject of deduction.

New erections.

We are of opinion that, when an ordinary staff of workmen only is kept, they should be occupied entirely in repairs, especially when they are expected to keep farm implements as well as buildings in repair. When the erection of new buildings is necessary, the work should be intrusted to a local builder. The plans, however, and specifications should be drawn up, or at least examined, by the clerk of the works, and the works also, whilst in progress, be under his inspection. When the building is undertaken by the estate staff, repairs often fall into arrear which it is almost impossible to recover. But this is, of course, a matter of judgment, and the course adopted may depend upon the question whether or not repairs are well in hand at the time the new work is projected.

Farm buildings.*

We do not intend to detail the various functions of the clerk of the works, nor to give plans of farm buildings and cottages. Opinions upon the latter subject differ so widely that it would be almost useless to attempt to express a judgment on the matter within the compass of a few pages. We may, however, point out one or two matters of a general practical bearing in the erection of farm buildings and cottages, which are important, not only in their relation to present occupation, but to future stability.

The erection of farm buildings should take place upon sites situated as nearly as possible in the centre of the farm, and in proximity to main roads. The buildings should also be grouped with a due regard not only to economy in the cost of erection, but also to the lessening of the cost of labour in the various branches of farm management. The stores for reception of food, for instance, should be situated in a central position, so that their contents may radiate, as it were, to all classes of stock. By this centralisation, labour of every description is minimised.

---

* See "Farm Buildings," by Author, published by Vinton and Co.

Water supply.

There should be a good water supply, and this can always be obtained where there is sufficient surface of roof. The supply should be collected in tanks near the centre, and not in open ponds, which are exposed to evaporation, waste, and contamination. If the buildings are upon an extensive scale, a cistern on the top, supplied by a force pump from the main tank, will facilitate the diffusion of water throughout the whole of the buildings. The allusion to tanks suggests one or two special observations as to their construction. The usual forms are oblong, square, or cylindrical. No set form, however, can be given, as it must be chosen according to circumstances. Oblong or square tanks it is necessary to build with bricks or some other material, and cement thereon; but in the case of cylindrical tanks where the soil is firm, bricks are not needed, as the cement can be applied direct. On the Rotherfield estate this practice has been in use for several years; and those made some years ago are still perfect. When sunk in chalk, or clay resting on chalk, or in any firm clay or rocks of harder structure, the plan answers well; but where flints or rubble abound, the sides must be puddled, or bricks be used. Upon these sides a tolerably thick coating of cement is laid.* A ledge

Tanks.

---

* To secure perfect work, a rough coat of cement mixed with sand should be first laid on, to a thickness of two inches, taking care to moisten the sides of the tank before application so that a perfect bond may be obtained. This coat, as well as the rest, should be commenced at the bottom and carried upwards. When it has set, which should be in five or six hours, another coat of cement with less sand should be applied to a thickness of one inch; this having set, another coat of pure cement should follow, one quarter of an inch in thickness; and finally a wash of cement should be carefully applied with a brush so that every crevice may be stopped. The bottom should be thoroughly examined for faults; this is especially necessary in the chalk, where crevices frequently occur. It is best done by the use of an auger or crowbar; and if a fault is discovered it must be opened and filled with clay. Being satisfied that it is sound and firm, a bed of concrete, a foot in thickness, should be laid on and then cemented the same as the side. The top should be covered with a brick dome, which may be made with bricks laid in cement. A manhole should be left, which may be covered with a slab of concrete made of moulded cement and fine gravel; a few holes for ventilating purposes should be made in the centre of the slab.

CHAP. VIII. *Repairs, &c.*

should be left near the surface when excavated, which will serve as a foundation for a brick dome, which, when carried up, completes the tank. The plan is exceedingly cheap compared to that of bricks, and bears the test of time, which alone will decide whether the term "cheap" can be legitimately used. When this practice is resorted to, especially in the case of softer formations, it is necessary that the plasterer should follow the excavator immediately, otherwise wet or frost affects the sides and causes crumbling and flaws. The sides of an open tank should slope slightly outwards, which allows the ice in winter to float upwards, thus preventing injury by expansion. It is also to be noticed that, where the water is collected off roads, the flow should first enter a dip-hole, where sediment may be collected, the clear water only entering the tank; otherwise it will constantly need cleansing, which should be avoided, as likely to injure the cement. It is a good plan to protect the tank by a wall or fence, and to have steps to the bottom at one end.* The cost of these underground cisterns may range from $\frac{3}{4}d.$ to $1d.$ per gallon, according to size and proximity of material.

Cottages.

In the erection of cottages we must bear in mind situation, water supply, and sanitary arrangements.

The situation should be chosen, as far as possible, where there is a free circulation of fresh air, on a slope, and with a S.W. aspect. But the locality will, of course, depend to a great extent upon the purpose for which the cottage is to be used. If for a stockman, it should be near his cattle sheds; if for a carter, near his stables; if for a day labourer, in or near the village. Centralisation of cottages, forming villages or hamlets, is a wise provision, as it brings together individual interests, and enables any design for the common good to be carried into better effect. It is better for purposes of education, for attendance at church, and obviates many objections incident to lonely and outlying cottages. Wherever distant cottages are necessary there should always be a pair. When there is but one, great distress, illness, or accident may take place, and no one may hear or know of it for days. Domestic calamities are so frequent as to render this objection very plain to all. Again, where a poaching propensity prevails, these lonely cottages form an excellent shelter.

---

* On hill farms a water supply for live stock may be secured by the formation of concrete troughs, so arranged as to fill from the overflow of such cheap tanks as we have described. This plan saves much carting of water in dry summers, and enables the farmers to combat long seasons of drought. The troughs should be made of concrete covered with cement carefully laid on. Where there is no roof surface to supply the tanks the run from roads may be intercepted.

Sanitary arrangements.

The more, however, we centralise our cottages, the greater will be the attention necessary to ensure efficient sanitary measures. The word "sanitary" means "pertaining to or designed to secure health." Therefore, although the term is usually coupled with matters relating to drainage, it properly extends to all measures which are requisite for the promotion of health. What is important for an isolated cottage is all the more important when situated in a village, as one defective cottage may contaminate the others.

The principal sanitary precautions requisite are to secure perfect ventilation, freedom from damp, sufficient drainage, and supply of pure water.

Circulation of air.

Under every cottage there should be an uninterrupted rush of fresh air, secured by air bricks—one of the many patents now in use. The draught should not be confined beneath the floor of single rooms, but as far as possible it should pass under the whole building. There should be at least a foot, and if possible a foot and a half, between the ground and the top of the joists. This prevents the accumulation of damp, which not only rots the boards at an early period, but is injurious to health, especially to that of children.

Hollow walls.

The walls should be hollow, *i.e.*, there should be a gap of at least two inches between the outer and inner wall. Any wet driving through the outer wall will then drip down between and pass out below, instead of through to the inside. When this precaution is neglected, much harm is done, especially where no fire is kept up; even in those rooms where there is a fire, the damp and heat combined create a humid atmosphere, which is very unhealthy. These walls are bound together by "ties," made of iron or glazed bricks; if a common porous brick is used, the damp will pass through and show itself on the inside.

Where, as in the erections of rough rock or rubble, this arrangement of the walls is impossible or difficult, it is a good plan to smear the weather sides inside with a thick coat of pitch, and then to lath and plaster over it. We have found this most effective.

Damp course.

A damp course should never be omitted; and should consist of slate, a layer of pitch, or prepared felt.

Any rush of surface water which may prevail in the neighbourhood should be diverted. Ventilation is best secured by high rooms, and if the upper portion of the window is fitted with a perforated pane, or one of the circular discs which revolve by the current of air, pure air must result. This is an especially important matter in bedrooms where there are no fireplaces, and where many children sleep. It is also a good plan to make a trap-door in the ceiling of the upper passage, so that a current of air may pass through to the roof.

Drainage.

The subject of drainage is perhaps the most important; the results arising from any defect in this matter being often fatal. The dead-well or cess-pool should be as far as possible from the cottage, and the pipe communicating with the sink should have a full amount of fall. There should be no connection between the cottage and the cess-pool, but the pipe from the sink should be open to the air, the fluid from it falling into a trap. The object of the "trap" is to prevent the escape of foul air from the cess-pool to the house. This may be further secured by ventilating the cess-pool by the insertion of a pipe which should be carried above the house. This latter precaution, however, is not necessary when these cess-pools contain only the washings from the sink. They should be lined with cement, as, if loose bricks only are used, which is termed "steaning," the fluid will penetrate through the surrounding soil and be wasted. This is to be avoided, as the substance possesses rich manurial qualities, and should be mixed with soil for use in the garden. The top should be covered with a stone or board, which may be removed for the periodical clearing.

Closets should, in our opinion, be removed from the cottage. They may be erected by themselves, or be under the same roof as the wood-sheds.

Earth closets.

Earth closets should in all cases be adopted. There need be no mechanical contrivance for the sprinkling of earth. All that is needed is a galvanised iron bucket with handles at the sides. A box of dried pulverised earth should be kept in the closet so that a small amount may be readily sprinkled over after use. The bucket may be easily lifted out and emptied for use in the garden at regular intervals. The labouring classes and others have of late become so impressed with the advantages attaching to this system that the objections to it have been removed.

In those districts where the water supply is obtained from wells, ponds, or rivulets, too great attention to these matters cannot possibly be given.

Tanks, supplied from the roofs of the cottages, yield the purest supply of water, and if these are periodically kept clean and lime-washed, the quality of the water is excellent—clean, sparkling, and cold. As a rule, the roof of an ordinary cottage, slated or tiled (the former is best, as none of the rain-fall is absorbed), will supply any reasonable amount of water. The tank may be constructed to hold from 2000 to 3000 gallons. This will afford an ample reserve, considering the large amount of rain-fall which is yearly registered in this country.*

---

* It may be useful to remark that with a rainfall of 24 inches, twelve gallons of water will fall upon every square foot of roof surface in the year. The rainfall of a district being known the available quantity of water can be ascertained.

It may be useful to remark that for cottage use a supply of ten gallons a head per day will suffice.

Material. **Timber and mineral substances.**

We now pass to the question of "Material;" but, as we have fully considered the subject of timber under that head, we shall dwell only upon such substances as we find in the soil, or mineral substances, viz., Rocks, Earth, Gravel, and Sand.

Utility of geological knowledge.

We may here remark that a knowledge of geology is a very important branch of estate management. We do not intend to imply that a land agent must be a geologist, but a general knowledge of the nature of the earth's crust may prove very useful to him in its relation to this question of material, and even more so in its bearing upon value; for it may assist him in forming an estimate of the materials—brick-earth, clay, sand, chalk, &c.—which are likely to occur beneath the surface of any estate.

To understand that it must be so, it is only necessary for him to call to mind the way in which the rocks or substances composing this crust have been formed, and how they have attained their present position. The term "stratum," which is applied to each layer of rock, means that it was "spread," the spreading process having been generally due to the action of water, which has deposited the rock as sediment, and, subsequently, by the upheaval of the earth's surface or otherwise, left the deposit high and dry. This is at least the process by which a large portion of the rocks or substances known to us have been formed, although the operation has been assisted or modified by other agencies, such as heat, volcanic action, and subterranean chemical changes. For instance, there are rocks, like granite, in which we can now trace no process of stratification, the whole mass appearing to have been fused together by the combined effect of heat and pressure. There are others, such as the slates, as to which it seems that they were originally stratified rocks, but that their original texture was modified after they were deposited by the effect of subterranean heat. Stratification, however, or the existence of matter in layers, is one leading characteristic of the earth's crust. But, inasmuch as these layers, as due to the action of water, must have been originally deposited horizontally one above another, the existing form of the rocks upon the earth's surface (tipped and tilted as they are in all directions) has to be accounted for by the fact that they have at various times been subjected to an alteration of level by the action of subterranean heat, and disturbance by volcanic agency, whole masses of horizonal strata having been upheaved, and thus exposing their broken edges, just as a book might be tilted and display the edges of its leaves. If it were not for this process of upheaval, we should know nothing of the existence of those rocks which were primarily formed, for we never could have reached them by digging; consequently our knowledge of the nature of the earth's crust would have extended only to those few strata most recently deposited, such as gravel and similar alluvial deposits. But the changes that have taken place have so exposed to view the different kinds of rock, that geologists, by observations at different places upon the earth's surface, have been able to write a complete history of the rocks and of the time and mode of their formation; and knowledge similarly obtained tells miners of the order in which the several rocks or substances occur, so that they are never working in the dark.

General remarks.

Having regard to these considerations, it may be well to indicate, as briefly as may be, the geological formation of these islands—just remarking that Great Britain and Ireland offer to our observation a wonderful epitome of geological phenomena.

The rocks of igneous formation which have been protruded through the earth's crust, and have been the means of upheaving and raising to various angles the stratified rocks above them, are the granite, greenstone, porphyry, &c., of Cornwall, the Channel Islands, and more extensively of Scotland; the sienite of the Malvern Hills, and Mount Sorrell, near Leicester; the serpentine of Cornwall; and the basalt of Scotland, the North of Ireland, and of the Rowley Hills near Birmingham, where it has burst through the rocks of the coal formation, and risen into a group of small conical hills. These few localities will furnish some of the most striking illustrations of this important fact.

But it is with the stratified rocks that we are most concerned; we will therefore endeavour to set them clearly before the reader in a tabular form before entering upon certain geological and practical remarks.

Tertiary Deposits.

English Crag, shelly, and sandy strata occupying the eastern part of Norfolk, Suffolk, and Essex, in which are the coprolite diggings.

London Clay, on which rest the Bagshot sands and clays. In England this consists chiefly of stiff blue clay, and covers the chalk from North Hants, by Reading and London, to the county of Norfolk, and composes what is called the "London basin." Another portion of this formation covers the chalk of South Hants and the northern part of the Isle of Wight, and extends along the coast from near Dorchester to Brighton, and is called the "Hampshire basin."

The Plastic Clay and sand of Woolwich, Reading, &c., extend more widely from beneath the London Clay, filling in deep excavations in the chalk, and partially overlying its surface. This is mostly a red clay.

Secondary Deposits.

The Chalk and Greensand together form the *Cretaceous System* or *Group*.

1. The Chalk is divided into—
   The Upper Chalk with flints.
   The Lower without flints.
   The Grey Chalk and Chalk Marl.
   These beds are almost entirely a pure carbonate of lime.
2. Upper Greensand.—Marly stone and sand with green particles —chloritic marl, and layers of green calcareous sandstone.
3. Gault.—Stiff blue clay, always separating the Upper from the Lower Greensand.

4. Lower Greensand consists of grey, yellow, and green sands, red ferruginous sands, and sandstones (which latter predominate), silicious limestones, &c. The greensand beds follow the chalk of the North Downs, from near Alton to Folkestone, and that of the South Downs from the same point to Beachey Head. It also extends from Dorsetshire in a north-easterly direction into the north-east of Yorkshire with little interruption.

The Wealden Group of deposits consists of—

1. The Weald clay and
2. The Hastings sand, occupying the central parts of Kent, Surrey, and Sussex.
3. The Purbeck beds.—Various limestones and marls of the Isle of Purbeck.

The Oolite Group.

1. Upper or Portland Oolite.—Coarse shelly, fine-grained, and compact limestones.
2. Kimmeridge Clay.—Blue and yellowish slaty clay, containing gypsum, and lignite called Kimmeridge coal.
3. Middle Oolite, Coral Rag, or Coralline Oolite.—Shelly freestones, coarse limestone full of corals, yellow sands, &c. Oxfordshire, Berkshire, Calne and Steeple Ashton, Wilts, Somersetshire, and Yorkshire.
4. Oxford Clay.—Dark blue clay with septaria and gypsum. Somersetshire, and Dorsetshire into Yorkshire.

Lower Oolite, composed of the following beds, viz. :—

5. Cornbrash.
6. Forest Marble.
7. Great or Bath Oolite.
8. Fuller's Earth. Near Bath, &c.
9. Inferior Oolite. Cotteswold Hills, Dundry Hill, near Bristol.

The Lias Group.

1. Blue Lias.—Shale and sandy marl stone, blue, white and yellow earthy limestone, in beds interstratified with clay. Dorsetshire, Somersetshire, Yorkshire, North of Ireland, &c.
2. Northamptonshire Sandstones.

New Red Sandstone, or variegated sandstone.

Red, white, blue, and green argillaceous sandstones—often micaceous, and containing gypsum and rock salt. Nottinghamshire, Yorkshire, &c., and extensively overlying the coal formation.

Magnesian Limestone.

1. Marl slate, variegated marls, yellow magnesian limestone, flexible sandstone. Nottinghamshire, north-east to Durham.
2. Red Conglomerate. Exeter.

The Carboniferous Group.

1. The Coal Formation, or Coal Measures.—Sandstones conglomerates, clays, ironstone, shales, and limestones interstratified with beds of coal. Centre and North of England, South Wales, and southern part of Scotland.
2. Mountain Limestone, or Carboniferous Limestone.—The upper part millstone grit, compact crystalline limestone. Devonshire, Mendip Hills, Derbyshire, extending north into Scotland, and widely developed in Ireland. It abounds in lead ore in North of England, and alternates with coal measures in Scotland.
3. Old Red Sandstone.—Coarse and fine silicious sandstones, and conglomerates of various colours — red predominating — extensive in Shropshire and Herefordshire, Devonshire, Brecknock, Dumfries, Forfar, and other localities in Scotland.

The Silurian Group of rocks present a great variety of argillaceous limestones, coralline and shelly limestone, sandy and argillaceous shales, micaceous sandstone, calcareous flags, &c. Many of the beds abound in fossils. These rocks occur in Shropshire, Herefordshire, Worcestershire, Gloucestershire, Radnor, Caermarthen, Denbighshire, &c.

Beneath these we come to the lowermost stratified rocks —viz., the clay slates of Wales and Cumberland, the slates, mica slates, and gneiss of Scotland—the latter, largely developed in the Grampian range, are highly metamorphosed by the heat of the subjacent igneous rocks.

Now, with this general view of the strata as presented to us in our islands, we may clearly see the source of the wealth of material which is always within our reach for building and other economic purposes, and of the wealth derivable from the variety of soils produced by the decomposition and mixture of so many strata of varying chemical and mechanical characters.

We will now enter into some details respecting the nature and economic uses of some of the natural productions above enumerated, beginning with the lowermost, and working upwards.

Granite. Granite consists of quartz, felspar, and mica, crystallised together in the act of slowly cooling. When these substances are equally distributed, and form a fine-grained granite it is best for dressing purposes.

We obtain our chief supply from Cornwall and Scotland; but the Channel Islands yield a great variety of fine-grained granites, many of them of delicate colours.

Sienite. Sienite resembles granite, but its third ingredient is hornblende instead of mica. The sienite of Mount Sorrell is much used in its district, at Leicester, for instance, both for building and paving.

Trap rocks. There is a large class of igneous rocks grouped under the term of Trap. They may be broadly stated to have been submarine lava streams. In some places they occur in tabular masses or platforms at different heights, so as to form on the sides of hills a succession of terraces or *steps*, and thus called "trap" from "trappa," Swedish for a flight of steps. The chief of these rocks are those called basalt and greenstone. The former is of a black colour, hard and fine-grained, but easily broken—some of it is coarser grained, or vesicular, like many more modern lavas. Basalt rocks often have a columnar structure, as is well seen in Fingal's Cave, Staffa, and the Giant's Causeway, and the basalt cliffs of the North of Ireland.

Greenstone. Greenstone consists of hornblende and felspar, and is either crystallised like granite, distinctly exhibiting the two ingredients, or these are more intimately blended, when the stone is of a greener colour. Greenstone is a hard and durable rock, tougher or more difficult to break than granite. It is often used for kerb-stones, and much of it is conveyed great distances to be broken up for metalling roads; otherwise its use is for the most part confined to the districts in which it occurs.

Slate. The slate rock is called clay slate, in consequence of argillaceous earth, the base of all clays, entering largely into its composition. It is a stratified rock, but the lines indicating this fact are in a great measure obliterated by the action of heat. It derives its greatest value from the peculiarity of its structure admitting of its being cleaved into thin laminæ. The lines of cleavage do not correspond with those of stratification, but stand in regard to them at varying angles. The best slates are obtained from Caernarvonshire, but useful ones are found in Westmoreland and Ireland. The slabs are taken from the quarry, split with iron wedges, and trimmed with knives. Slates are cut to various sizes, and are distinguished by various names as Imperials, Duchesses, Rags, Queens, Countesses, and others. They should be selected in accordance with the purposes for which they are required, and the cost, including labour, may be estimated at from thirty to forty shillings per square.

Passing from the igneous and primary to the ordinary stratified formations or secondary rocks, we must endeavour to generalise our remarks as much as possible, or we shall be led into a larger geological essay than would be suitable for the present work. To begin with sandstones.

Sandstone.

Sandstone consists of siliceous grains, or sand, naturally cemented together by a base of silex, argillaceous earth, carbonate of lime, or iron, and are then called siliceous, argillaceous, calcareous, or ferruginous sandstones. From this circumstance and others affecting the quantity and nature of the base, they differ in character from a hard rock to one which can be readily broken up in the hand. The sand is often destitute of base and has no cohesion.

Testing of sandstones.

It may be seen from this that the durability and other qualities of sandstone must vary considerably. Before using sandstone, the character of which is not well known, it may be tested by weighing a mass when dry, and again after immersion in water. If the weight is much increased by the absorption of water it cannot be considered a good material. The best sandstone known in use for buildings is that universally used in Edinburgh for architectural purposes. It is a fine white freestone belonging to the rocks of the coal formation, and is obtained from Craigleith quarry in the neigbourhood of the city. The common

York paving stone also belongs to that formation, and also the hard Pennant sandstone of Gloucestershire and South Wales. Many other kinds are used, more or less locally, derived from the Silurians, old red sandstone—the new red, used much at Liverpool, the Hastings sand, the green sand, lower and upper—the latter largely quarried at Ventnor and Shanklin. Escaping from beneath the chalk surrounding the Weald of Hants, Sussex, and Kent, is a grey variety of sandstone called firestone, belonging to the upper greensand. It is soft and readily worked, but is very durable; so little affected by the weather, that in some old monastic buildings the tool marks can still be distinguished.

Limestones. The limestone rocks perhaps possess more interest than any others, as they exhibit to us most remarkably the records of life in the early ages of the world. Some of them are almost entirely built up by the remains of corals, encrinites, and shells; indeed, their very existence appears to have depended on animal life. They are all a more or less pure carbonite of lime, and may be converted by heat into the state of quick or caustic lime for building and agricultural purposes.

These formations provide the building materials which will, more frequently than any other, come under the notice of the land agent. Under the present head we shall allude to them only as building stone, and shall consider them in their aspect of lime when we come to speak of mortar and cements.

From the Silurian group of formations and the mountain limestone beds are obtained some of the most durable building stone, hard enough to make good roads. They yield also black and variously coloured marbles. Marble is the term applied to limestones which have been brought to a more or less crystalline state by the action of subterranean heat under pressure, and capable of taking a high polish. Even so soft a limestone as chalk may be seen in the North of Ireland in contact with basalt rendered quite hard and brittle, though not visibly crystallised. Many beautiful

Marbles.

marbles of similar age to the above are obtained in Ireland. Some of them are perfectly black and contain shells and corals which are of a pure white; others are green, yellow, brown, dove-coloured, &c. It is a great pity these marbles are not brought more into use. All limestones consist of carbonate of lime; the impurities they contain giving the various colours which we meet with amongst them.

Adhesive and absorbent powers of limestones.

The value of limestones used for building is determined by reference to their adhesive and absorbent powers. When required for buildings of importance the various kinds procurable should be thoroughly tested. This is done by immersion of small blocks in water to ascertain their absorbent power, as stated in speaking of sandstones, and also by determining the force necessary to crush blocks, say cubes of two inches. The action of frost we may presume must be greatest on the most absorbent specimens. But it would be, perhaps, impossible to determine the amount of chemical action exerted by the atmosphere. We get some illustration of this by contrasting the climatic influences of Egypt and London.

Freestone.

We would here allude to the term freestone. It appears to be usually applied to the softer limestones, but we are disposed to use it as a general technical term applicable to all building stones which are soft enough to be readily squared for use, and not as possessing any geological significance.

Dolomite or magnesian limestone.

Passing to the stratified rocks above the coal measures, we find the dolomite or magnesian limestone between them and the new red sandstone. This formation yields a valuable building stone. Above the new red we have the argillaceous limestones and the clays of the blue lias system, which do not provide us with building materials of special or general importance.

Oolites.

The lias rocks are generally regarded as the base of the next great range of deposits—that of the oolites. These constitute an extensive series of strata, geologically most interesting and economically important. The term oolite, or stone-egg, is applied to the limestones of this series from their prevailing character being that they are made up of a multitude of minute spherical concretions resembling the roe of a fish—and sometimes called roe-stone. This peculiarity is strongly marked in some strata, but obscurely in others. Sometimes the concretions are so large that the stone is called pisolite, or pea-stone. This formation occurs in England on a line extending from the Island of Portland to Whitby on the Yorkshire coast.

This whole series of limestones, with a few accompanying subordinate beds (see tabular view), are separated one from another by two principal intervening beds of clay, each several hundred feet thick. The entire group based upon the lias clays—the lower oolites are separated from the middle by the Oxford clay, and the middle from the upper by the Kimmeridge clay. The great or Bath oolite, and the upper or Portland oolite, as is well known, yield the finest freestones England produces—as pre-eminent amongst limestones as the produce of the Cragleith quarry near Edinburgh is amongst sandstones.

Wealden.

Immediately above the Portland oolite commences the Wealden formation, so called from one of its chief members occupying the Weald of Kent. It begins with the limestones and marls of Purbeck Island. The limestone is the well-known Purbeck stone, some of which, in its upper beds, is called Purbeck marble, and is full of small freshwater shells. The middle portion is the Hastings sand, consisting of soft yellow sandstone and beds of hard shelly limestone. The upper portion is the Weald clay. This last contains beds of hard limestone, full of paludinæ—a species of freshwater mollusk. This substance called Sussex or Petworth marble and the Purbeck marble were both formerly much used—the former for monumental purposes, the latter in the construction of the small dark-coloured columns in clustered Gothic architecture.

Petworth and Purbeck marbles.

Above the Wealden commences the cretaceous system, consisting of the greensand and chalk formations. The former has been alluded to under the head of sandstones, but we may here remark further on the grey sandstone or firestone, that with other marly and argillaceous beds constituting a peculiar development of the upper greensand in East Hants and Sussex, called the malm rock, it has no green bed except one of chloritic marl, from about five to ten feet thick, in contact with the chalk marl above it. Some of the upper beds consist of a hard blue argillaceous rock, combined with silex, but with little or no lime. It is a capital building stone, but not easily worked, and besides for building walls, it is used for lining lime kilns, in which case it is often glazed by the melting of the silex. The grey sandstone beds are called fire stone, because it is used for hearth-stones, and for flooring ovens. (See Gilb. White's Natural History of Selborne; Letter 4. Bell's edition.)

Malm rock.

Chalk.

With the Chalk we come to an end of the secondary strata. Like all other limestones, it is an almost pure carbonate of lime. It is of great extent, occupying a line of country from the Isle of Wight and the Dorsetshire coast to Flamborough Head, often rising into high sheep downs. A large portion of it is concealed by the tertiary beds of clay and sand of the London and Hampshire basins. It is more used for dressing land either burnt into lime or not, and for the manufacture of lime for building or agricultural purposes, than it is as a building stone. It is, however, employed to a small extent for building barns, stables, and other erections on a farm, care being taken to place the stone in the position it occupied in the pit, *i.e.*, keeping the natural bedding planes in their orignal horizontal position.* The bottom of the lower or grey chalk makes good hydraulic lime.

Flints.

The flints of the upper chalk are used both for building and road making. When faced, they make a beautiful wall. The church at Westmeon, in Hampshire, is a very striking piece of flint work, being constructed entirely of faced and squared flints. But this work is very costly. For ordinary erections they are used in the rough state, and form dry and pretty walls. Broken flint makes a better concrete than rounded gravel.

---

* It must not be implied that we recommend this as a building stone. It is practically devoid of all the merits which such should possess.

Tertiary formations.

The tertiary formations in England rest entirely on the chalk. They occupy two large areas called the London and the Hampshire basins. (See the tabular view.)

The plastic clay and sand.

The plastic clay and sand lie immediately on the chalk, and fill up deep pits and fissures in its surface. In Hampshire, and parts of other counties, this clay, in the form of a red brick earth partially, and in varying depth, according to the inequalities of the surface it rests upon, overlies the chalk far beyond the limits of the London clay above. The clay is too sandy, and makes rather porous bricks.

London clay and Bagshot beds.

Septaria.

The London clay and the Bagshot beds above it are of great thickness. They yield brick earth and much of the septaria from which Roman cement is made. Cement stone is also dredged from the sea off Bognor and Harwich. The Bagshot sands are beautifully exposed in the cliffs and chines of Bournemouth and Boscomb.

Freshwater limestone.

Above the tertiary beds already spoken of we have, in the Isle of Wight, a number of others, extremely interesting to the geologist, consisting of marls, limestones, and clays, and presenting alternations of marine and freshwater deposits. Amongst these, almost the only building material is a freshwater limestone, not much used far from the localities where it is quarried. The best known quarry is at Binsted, near Ryde. It was, to some extent, employed in the erection of Chichester Cathedral, but it cannot be considered as a good building material. It consists of a mass of shell, not well cemented together by the calcareous matrix.

Gypsum.

It may not be out of place to mention here that the siliceous French millstones are obtained from the tertiary strata of the Paris basin, and also the gypsum from which the plaster named plaster of Paris, from that circumstance, was originally made.

All the formations above the chalk we have now spoken of are the eocene or older tertiaries. The miocene, less recent, or middle tertiaries are scarcely to be distinguished in this country. The pliocene, or more recent, are only represented in England by the crag. Finally, the term pleistocene, newer pliocene, or more recent, embraces the superficial beds of gravel, clay, and sand, in which are found the bones and teeth of living species of mammalia—depositions of lime still in operation, as the formation of travertine (the building stone of Rome), the production of calcareous tufa as in Derbyshire, by the action of what are called petrifying springs, and the lining and filling up of caverns with stalactite—the growth of coral—and the formations by recent volcanic actions.

Quick or caustic lime.

After these general remarks on the building stones derived from the rock formations of this country, we will enter into a few practical details respecting methods employed for utilising some of these natural products chiefly in relation to those which are used for making mortar, bricks, and cements.

We may first observe that all limestones when burnt in kilns lose the water which they contain, and also one of their essential elements, namely, the carbonic acid. This changes the stone from the carbonate to the "quick" or caustic condition of pure lime or oxide of calcium. Some limestones, for instance those of the lias formation, contain a proportion of argillaceous earth, and consequently produce lime all the more valuable in the manufacture of cements.

Cements.

Lime differs much in quality—those that increase in bulk on application of water are called "fat limes," those which do not are called "poor" or "meagre" limes. The former are most useful for mortar, the latter for cements.

Lime-burning kilns.

Lime is burnt in kilns, and when this is done on the estate the "flare" kiln is generally used. This class of kiln has the economical advantage of being adapted to the employment as fuel of wood, hedge trimmings, heath, gorse, or any combustible refuse.

Cost.

Lime is generally burnt by the "kiln," the price, of course, depending on the size of the kiln—but, including the digging of the chalk, filling, and burning, it will run from 21s.

Filling.

The process of filling a flare-kiln requires considerable skill. A ledge of brickwork at the bottom of the wall of the kiln is arranged on which to build up a chalk dome. Upon this is thrown the whole mass of chalk, and below it is placed the fire. When burnt the lime is taken out from the furnace hole.

Object of burning.

Well-burnt lime should come out very much in appearance as it goes in, but in the "quick" or caustic state. The object, of course, of the operation is to drive off by heat the carbonic acid and water, for lime in the form of a carbonate is useless for mortar. When burnt it becomes, as before observed, an oxide of calcium, which has a powerful affinity for water. When water is added to it, it becomes a hydrate of lime, and great heat is evolved by so much of the water entering the solid state and parting with its caloric of fluidity. Whilst the lime is hot from the process of slaking a certain proportion of sand is mixed with it and a silicate of lime is formed. The particles of sand act as nuclei around which the carbonate and silicate of lime can crystalise.

Use of sand in mortar.

Keeping of lime.

It is, however, better to purchase lime for mortar, and not too much at once, for if kept long it becomes "dead," *i.e.*, slaked by the slow absorption of water from the atmosphere. If any quantity is kept, it must, to secure its properties, be well covered with sods. It should never be kept in wooden sheds, or near straw, as, if it becomes damp, great heat is generated, and there is consequently danger of fire.

Sand.

The sand used for making mortar must be either pit or river sand. Sea sand contains salt, which renders it unfit for the purpose. A mixture of coarse and fine sand is better than sand of an equal degree of fineness.

The chalk formation contains "bags" of sand of the plastic clay formation; but as a rule this sand is so mixed with loam and clay as to render it unfit for anything but rough work. Sand in itself is not an expensive substance, but it is heavy, and the carriage is both costly and damaging to tackle.

Large beds are found in many formations, often red and white lying close together. The lower greensand formation contains a large quantity of both coarse and fine.

Mortar.

Mortar consists of two and a half of sand to one of lime. The lime must be fresh.

A circle of sand is formed and the lumps of lime placed within; these are then slaked and all are worked up together.

Cements.

As already stated, limes are classed as "fat" and "poor," and it is the latter only that, when mixed with silica, alumina, and magnesia, have the power of hardening under water. These are called hydraulic mortars or cements.

There are many kinds of cement—Smeaton's, as used at the Eddystone Lighthouse, was composed of equal parts of Aberthaw or lias lime in the state of hydrate in fine powder and pozzuolana, also in powder, well beaten together. Pozzuolana is a volcanic concrete thrown up from Vesuvius; named from the town where it was discovered. An artificial pozzuolana is prepared by burning clay. The facing of the London Docks was cemented with the following mixture, viz.: four parts of lias lime, six of river sand, one of calcined limestone, and one of pozzuolana.

A good cement may be formed by adding two and a half parts of burnt clay to one of blue lias lime, thoroughly pulverised and mixed.

Roman cement.

This celebrated cement, the use of which has been to a great extent superseded by others, is made by burning spheroidal masses called septaria. They consist of lime and clay, with a small percentage of iron, and are found in the London and Bagshot clays, in the lias clays, and some others. Much of it is dredged off the coast at Bognor and Harwich, where the London clay passes under the sea.

Plaster of Paris.

Plaster of Paris is made from gypsum, which is a sulphate of lime. This beautiful mineral is baked with sufficient heat to expel its water of crystallisation, which treatment renders it opaque. It is then ground to a fine powder. It is a cement which hardens rapidly, so as to render it necessary to mix it for use in very small quantities at a time. It is only fitted, however, for stucco work, as if exposed it absorbs moisture and cracks. It is used for the erection of marble mantel-pieces, cornice-work, and mouldings.

A cement for filling in cracks in iron boilers is made by mixing iron filings with clay and oil.

Portland cement.

Portland cement is the most common now in use. It is manufactured in several parts of England, but chiefly on the banks of the Thames and Medway. It is made principally from the river mud. The ingredients are about two and a half parts of mud to one part of chalk, obtained from the same geological formation. The ingredients are brought to a finely pulverised state by passing between rollers with water, and are then allowed to deposit, after which they are desiccated and burnt. The cement is then ground under millstones, revolving horizontally, and finally passes through a sieve on to a floor, where it is allowed to cool. It is then placed in casks and is ready for use.*

Concretes.

Concretes are principally used in foundations, but may be also used for walls. When this is the case, however, the tops must be well protected by coping, or the wet will penetrate, and when frosts set in the wall will crumble away by expansion. Concrete is composed of lime finely pulverised (not slaked), gravel, or broken stones, and sand.

---

* For further information on the manufacture of cements, see Weale's Series on Limes, Cemente, Mortars, &c.

Broken flints or other stones are better than rounded gravel. The materials must be mixed near the spot where they are to be used, and mixed quickly, as they rapidly set. The proportion of the materials differ, but five parts of stone and sand to one of lime is often used. The sand and lime (or cement if used) must be first thoroughly mixed, and then mixed well with the stones whilst dry. A little water is then added, and the whole worked up with shovels into the consistency of mortar, and then quickly applied. The mass, when first mixed, decreases in bulk, but it rapidly increases, or swells, and this to a marked degree. Concrete is valuable as a foundation on account of damp being unable to rise through it; a damp course of slates, nevertheless, above the ground line is very advisable. Where slates, however, are not at hand, a coat of pitch, felt, or other impervious substance over the concrete will be found useful.

Bricks.

Whenever bricks can be made upon the estate a great saving is effected. No matter what stone or other building material is procurable, bricks, to some extent, are indispensable. Brick-earth is not, however, to be found upon every estate; when found, therefore, it considerably enhances the value.

The best brick-earth is that consisting of clay and sharp sand, free from stones. When clay preponderates, sand must be added, and when the clay is too tenacious some of the top soil may be added, but this makes an inferior brick.

To find brick-earth, an auger will be found very useful, as the use of it saves a great deal of heavy digging. It consists of a square iron bar, about ten feet long, and about one inch square, the end is fitted with a shell auger, and a movable handle is attached to it. A hole should be made with a common crowbar, about six inches deep, and filled with water. The auger is then inserted and worked by two men; it must be lifted about every two feet (more or less, according to circumstances), and the point of the auger cleared, and a little water poured into the bore. When a good earth is found, it must not be at once concluded that a "head" has been discovered, as the overlying clay beds are most eccentric in their course, especially in the chalk formation. More holes must be bored at various distances; by this means the extent and direction of the deposit may be correctly ascertained. Satisfactory results having been obtained, we may set to work to open a heading and prepare our brick-field.

The clay should be dug in autumn or winter, and when this is completed, the necessary buildings may be erected. Very little preparation of this kind, however, is required; a rough shed for each moulder, a more permanent shed for keeping sand, tools, &c., in, and in which plinth and coping bricks can be laid out to dry; some T sheds, with prepared floor for drying the bricks, and a pug-mill and kiln.

The bricks necessary for the erection of the kiln, say about 30,000, can be burnt in the hole from which the clay has been dug.

Brickmaker's tools.

Each moulder's shed must be fitted with a bench, upon which he places his mould and box for supply of water. His tools consist of strike, brush, scraper, and clay scoop or shovel, wheelbarrow, and boards for the bricks.

Pug-mill.

These sheds must be erected near the heap of clay, and in close proximity to the pug-mill. This consists of a vertical iron shaft fitted with blades, the bottom ones being set at such an angle as to squeeze out the clay. This is cased in a wooden cylinder, open at the top, and open on one side at the bottom. The shaft is worked by a horizontal arm, to which a horse is attached. One moulder wheels the clay, which has been previously wetted, to the cylinder, and tips it in, the horse walking round the while, so that the knives or blades inside work up the clay, which, when it reaches the bottom, is pressed out by the aforesaid blades, and is carried away by the moulders to their respective sheds. This process is called "pugging," and must be done every morning; the quantity required will depend upon the number of moulders and the number of bricks they are each able to make in the day. A good moulder will make from 800 to 900 in the day. When there is no pug-mill (and its use is by no means general) each moulder is expected to temper his own clay before beginning work. This is, however, rather a tedious process. It is worked up with water, like mixing mortar.

Moulding sand.

Each shed is supplied with a quantity of moulding sand, which must be what is called "silver sand." It must be perfectly dry. With this the moulder sprinkles his mould and plate each time he makes a brick—this is to prevent the clay adhering to the wood. He places each brick upon a board, and then upon his barrow, and when this is full he wheels it away to the T shed, where he places the bricks in rows, each brick on edge, the next row being placed upon the other alternately. These rows are called "hacks." Here they are left to dry for three or four weeks, according to the state of the weather. The bottoms of the hacks require attention. They must be placed on a raised platform so that water may not rest upon them; when it does it will become absorbed by the bricks, and the lower tiers giving way will overthrow the whole, and cause loss. Drain pipes, 3in. in diameter, laid side by side, make a very good bottom.

The kiln generally used upon estates is the kind termed "flare kiln," and is constructed for burning wood. Two advantages are gained by making bricks upon the estate; a brick is produced at cost price, and a home market is procured for rough bavins and timber. A useful-sized kiln is one that will hold 15,000 to 20,000 bricks. As a rule, 1000 bricks will require for drying and burning 100 bavins.

These kilns are usually square; they must be built very strong, and be backed up with earth, and bound round the top with wood and iron, as the expansion caused by heat is very great. It is best to cover it with an iron roof to keep out wet; there must, however, be plenty of room for the passage of the fumes. The bricks are put in behind, and, when completed, the door must be closed with bricks, and rammed with sand, as, if not air-tight, the bricks are injured.

The filling of a kiln requires a great amount of practice, and cannot be described in a work of this nature. The bricks must, however, be so placed that a free circulation of heat passes through them, and each one binds the other to prevent warping.

The first process is to dry the bricks with a gentle fire, which will occupy about two days; when this is done a full fire is put on and they are "burnt"; when once this is commenced the fire must be kept up night and day without ceasing until the operation is completed. When cold, they are removed and piled up for use.

Cost of making bricks.

Bricks are made by the thousand. The price of making may be said to range from 13*s.* to 16*s.*, and includes digging the clay, moulding, and burning. The chief moulder finds all labour.

White bricks are made by mixing lime with the clay. The lime is mixed in large reservoirs, and let into the clay during the process of tempering.

Draught-kiln.

When bricks are burnt with coal, the kiln is called a "draught kiln." About 3cwt. of coal are required to burn 1000 bricks.

The clamp.

The bricks known as "stock-bricks" are burnt in the "clamp," *i.e.*, a pile so erected as to admit of a draught throughout. When this plan is resorted to, it is necessary to mix crushed breeze with the clay. The breeze is laid about 6in. in depth upon the top of the undug clay, and with each spit that is taken off the breeze forms a part, all is then mixed and tempered together. When a sufficient number of bricks are got together the fire is started beneath with small coal and cinder, and this igniting the breeze contained in the brick soon sets the whole mass aglow, the fire is carried on by the draught, so that as long as fresh bricks are applied at the end, away from the fire, the burning will continue; and in about three weeks those first burnt may be removed, whilst the rest are still burning. The breeze, however, burns out and renders the bricks very porous. Another danger is the running of the silica in the clay by the great heat; when this is the case the bricks become massed together, and are valueless. It is difficult altogether to prevent this calamity. It is caused by the fusion of the silica and alumina. Clamp bricks are not so valuable as others, being about 6*s*. to 8*s*. per 1000 less. The outside of the clamp must be plastered with clay to prevent escape of heat laterally.

A good brick should give a clear ringing sound when struck, and be dark in colour outside, and a rich red when broken, and be free from grit.

The size of a brick is 9in. by 4½in. by 2½in.

Some clays shrink more than others. When this is the case the mould must be rather larger than common. It is necessary to maintain a regularity in the size, in order that they may work well together.

The first-burned bricks are often light in colour and soft, this is owing to the damp in the kiln from its exposed position through the winter. They are used for inside work.

Tiles.

Clay suitable for brick-making is not adapted to tile-making, and *vice versâ*. For tiles the clay must be "strong" and tenacious. The process of tempering is also important, and will require different treatment to that already explained. Reservoirs or basins must be formed on the ground with clay, about one foot to one and a half feet deep. In these the clay must be placed, and allowed to soak for some time in water, and then be hand tempered.

If any stones are present they must be either extracted or crushed; if allowed to remain, the heat will burst them, causing a flaw or breakage in the tile.

They are moulded in a similar way to bricks; before being taken off the moulding-plate two holes are pierced through them to receive the pegs, they are then laid to dry like bricks, only they lie flat in lots of three or four, tier upon tier.

They require great care in packing into the kiln, as if improperly done they will twist and warp. The heat, too, must be uniform throughout. A good tile will, when lifted off the mould-plate, remain stiff in the hand; a clay fit for bricks only, will, under the same circumstances, fold up in the hand like paper.

For further information upon materials we may refer the reader to the many useful and well-known books now in circulation.

The various measurements required in this department will be found in the next chapter.

CHAPTER IX.

REPAIRS, BUILDING, AND MATERIAL

(*Continued.*)

RULES FOR ESTIMATING AREAS AND CAPACITIES.

AREA OF BARGE ROOF, HIPPED ROOF, CIRCULAR ROOF—AREA OF BRICKWORK—CAPACITIES OF TANKS—BUILDINGS FOR APPROXIMATE COST—EXAMPLES.

CHAP. IX.
Repairs, &c.

IT will be useful to supplement the observations contained in the last chapter, by stating the rules of most frequent application for determining the quantity of material, and consequently the cost involved in effecting new roofing and some other equally common operations.

TO ASCERTAIN SURFACE OF THATCHING, TILING AND BRICKWORK.

The usual practice is to reckon the two former by the *square* of 100 square feet, and the latter by the *rod* of 272 square feet. Thatching, tiling, and slating are all contracted for by the square, and brickwork by the rod; and, if not contracted for in the real sense of the word, the estimates are based upon such calculations.

1. To find the surface of a common *barge* roof (a roof in the form of a partially-opened book)—

Take the length and breadth in feet, and multiply together; this gives the surface of one side. Multiply by 2, and divide the product by 100, which will give the number of squares contained.

2. To find the surface of a *hipped* roof (a roof in the form of a partially-opened book, but with the topmost corners sliced off, so that a further triangular roof is needed at the ends)—

Take the mean length and multiply by the breadth: this will give the surface of one side. Then take the length of the end, multiply by the length of the perpendicular distance, from the eave of the end to the ridge, and divide by 2 (see rule of "Triangles"): this will give the surface of the end. Add the two products together, multiply by 2, and divide by 100, and we have the area required; or, take the length, at the eaves, of one side, throw the tape over the roof, and take the breadth of the two sides; multiply the two measurements together, and divide by 100, and we have the area required. In this case we have included the ends, though we have not measured them because the four triangles, included by taking the length at the eaves, are exactly equal to the two ends. The point of the "hip" is found by measuring along the side a length equal to half the breadth of the building, and erecting a perpendicular from that point. The triangle thus formed must be (as will be seen) equal to one half the hipped end of the building.

3. To find the surface of a *circular* roof. We may first show, by way of explanation, that the roof will represent half a circle, of which the radius, or half diameter, will equal the height from eave to ridge, and the circumference twice the circumference of the roof. To show this—take a piece of paper, cut out a half circle; if the two halves of the diameter are brought together a cone is formed, the circumference of which equals the arc of the semi-circle, and the sloped height its radius. Hence we get this rule—

Take the length round the eaves, or the distance from eave to point; either will form a sufficient basis for calculation. Then proceeding under rules for "Circles" we have the distance from eave to point = radius of semicircle and circumference of roof = arc of semicircle, then the radius × ½ circumference, gives the area of the circle, and half of this will be the area of the roof.

N.B.—The distance from eave to point × 2 × 3·1416 (or $3\frac{1}{7}$) = circumference of a circle, whose area will be twice the area of the roof. Another formula easy to remember is $\pi r^2 \div 2$ = area of thatch.

CHAP. IX.
Repairs, &c.

4. To find the area of *brick-work*—

Take the length and height in feet, multiply together, and divide by 272, and we get the area in rods. A rod of brickwork, however, is always calculated to be 14 inches thick (or the breadth of three bricks laid side by side with their accompanying mortar); therefore, supposing the wall measured only 9 inches thick, proceed as follows: Multiply the area by 2, and divide by 3, and we have the area in rods, 14 inches thick; or, if 4½ inches thick, divide by 3.*

5. To ascertain the capacity of tanks. Measurements must be taken as follows—

For oblong or square tanks take mean length, breadth, and depth. For circular take depth and mean diameter. Then proceed, according to rule, and multiply the sum obtained, which will be in cubic feet and fractions of a foot, by 6, the number of gallons in a cubic foot, and we have the required contents in gallons.

6. To ascertain the approximate cost of buildings. A very close estimate of the cost of buildings may be obtained by measurement at a certain sum per cubic foot:

Labourers' cottages	4½*d.* to 5*d.*
Farmhouse stables	3½*d.* to 4*d.*
Barn	3*d.* to 4*d.*
Barn, granary over	4½*d.*
Pigsties	4*d.* to 5*d.*
Cart sheds...	2½*d.* to 3½*d.*
Tanks (large)	6*d.*
„ (small)	8*d.*

The above will be found fairly accurate if the measurements are taken as follows:—length along the side, breadth along the end, height from bottom of concrete to upper side of wall-plate.

1. Example of measurement of *barge* roof—

A roof measures 20½ feet in length by 9¼ in width; required the number of squares.

By fractions—

$20\frac{1}{2} \times 9\frac{1}{4} = \frac{41}{2} \times \frac{37}{4} = \frac{1517}{8} = 189\frac{5}{8}$; $189\frac{5}{8}$ reduced to decimals $= 189{\cdot}625$. Then $189{\cdot}625 \times 2 = 379{\cdot}25$ feet, which represents superficial area of the two sides of the roof, which, divided by $100 = 3\frac{3}{4}$ squares.

---

* In measuring brick-work the whole surface is taken, and the window and door spaces are afterwards deducted.

2. Example of *hipped* roof—

A roof measures 25 feet in length at the eaves, 9 feet at the ridge, 12 feet from ridge to eave, and the end measures 16 feet in length at the eaves, with a perpendicular of 12 feet; required the number of squares.

By fractions—

$25 + 9 = 34 \div 2 = 17$ mean length; $17 \times 12 = 204$ superficial feet; area of one side.

Next we have the end (see "Triangles")—

$16 \times 12 \div 2 = 96$ feet, area of one end; $96 + 204 = 300 \times 2 = 600$, area of whole roof; $600 \div 100 = 6$ squares—*answer required.*

By second rule—

or, $25 \times 12 = 300$; $300 \times 2 = 600$, or 6 squares, as above.*

3. Example of *circular* roof—

Required the number of squares of thatch on a wheat rick measuring 20 feet from eave to point (see "Circles");

20 feet represents the radius; therefore twice that distance or 40 feet, equals diameter; 40 feet $\times$ 3·1416 (or $3\frac{1}{7}$) $= 125 =$ circumference.

Half the diameter $\times$ half the circumference equals the area of the circle; therefore $20 \times 62{\cdot}5 = 1250$, which is the area of the circle or double the area of the roof;

then—

$1250 \div 2 = 625$, or $6\frac{1}{4}$ squares of thatch.†

4. Examples of brick-work—

A brick wall 70 feet long by 12 feet high and 14 inches thick required the number of rods:

$70 \times 12 = 840$; $840 \div 272 = 3\frac{3}{34}$ rods.

The same 9 inches thick; required the number of rods:

$840 \times 2 = 1680$; $1680 \div 3 = 560$; $560 \div 272 = 2\frac{1}{17}$ rods.

The same $4\frac{1}{2}$ inches thick; required the area:

$840 \div 3 = 280$; $280 \div 272 = 1\frac{1}{34}$ rods.

---

* It will be noticed that the surface is the same whether the roof is barged or hipped, but in the latter case there is a saving of two gables of brick-work.

† If the pitch of the roof is low, the surface will be larger, if steep the reverse, so that it may be necessary to take this into consideration.

5. Examples of capacity of tanks—

An oblong tank measures 20 feet long, 10 feet wide, and 9 feet deep; what does it contain?

$$\begin{array}{rrl} & 20 \times 10 \times 9 \times 6 & \text{contents in gallons.} \\ & 20 & \\ & 10 & \\ \hline & 200 & \\ & 9 & \\ \hline & 1800 & \\ & 6 & \\ \hline \textit{Answer} & 10{,}800 & \text{gallons—the contents required.} \\ \hline \end{array}$$

A circular tank measures 15 feet in depth, and has a diameter of 9 feet; what does it contain?

Take either of the rules given and ascertain the area of the bottom. By rule 1, for instance:

$$9 \times 3{\cdot}1416 = 28{\cdot}2744 = \text{circumference};$$

therefore—

$$\begin{array}{rl} 28{\cdot}2744 \times 9 \div 4 = & \text{area.} \\ 28{\cdot}2744 & \\ 9 & \\ \hline 4)\ 254{\cdot}4696 & \\ \hline 63{\cdot}6174 & \text{feet} = \text{area of bottom.} \\ \hline \end{array}$$

Multiply this by the depth, viz., 15, and we have 954 cubic feet, as contents, which multiplied by 6 gives 5724 gallons—*the answer required.*

6. Example of cost of buildings—

A labourer's cottage measures 29 feet long, 22 feet wide, and 17 feet high. What will be the approximate cost?

29 × 22 = 638 × 17 = 10846 cubic feet, 10,846 × 4½*d.* = 203*l.* 7*s.* 3*d.*

CHAPTER X.

BLIGHTS OF WHEAT AND OTHER CEREALS.

TYLENCHUS TRITICI ("BURNT CORN," "EARCOCKLES," OR "PURPLES")—CECIDOMYIA TRITICI ("WHEAT MIDGE")—CECIDOMYIA DESTRUCTOR ("HESSIAN FLY") — USTILAGO CARBO ("SMUT")—TILLETIA CARIES ("BUNT" OR "BLACK-HEAD")—UREDO LINEARIS ("RED GRASS" OR "RUST")—PUCCINIA GRAMINIS ("MILDEW") — CLAVICEPS PURPUREA ("ERGOT OF RYE").

CHAP. X. *Blights of Wheat, &c.*

We propose to treat this subject rather from a practical than a scientific point of view. It must in some form present itself to the valuer when settling values upon growing corn, as there are few crops of cereals that are not more or less affected by some of the following blights; and it is in its effect upon value that it is for us most important, and that some knowledge of the subject is necessary.

When valuing we have examined crops of wheat superficially, and set a quantity upon them, but on a more minute examination we have found blights of various kinds, to such an extent as to materially affect the ultimate award.

The following are some of the most common blights :

Tylenchus Tritici ("Burnt corn," "Earcockles," or "Purples").

The *Tylenchus Tritici,* or wheat eel, is one of the infusoria causing the disease known in some districts as "burnt corn," "earcockles," or "purples."

The minute eggs are introduced into the sap from the infected grains and hatch in the germen or seed-bud.

CHAP. X.
Blights of Wheat, &c.

The worms are transparent when young, but become yellowish as they grow older. They attain one quarter of an inch in length, and possess wonderful vitality; if the infected seed is kept dried for a year, the worms will be found alive when put in water and examined by the microscope.

An ear of wheat infected with this pest presents a somewhat peculiar appearance. The glumes or husks are bleared and blackened near the stalk, and the grains are deformed, being puckered at the bottom and flattened at the top, and when ripe are of dark brown colour, approaching black. If broken open, the inside will be found full of a white substance like cotton; these are the eels.

They are often a great source of loss, as the infected ears are not only lost to the crop, but the whole sample is deteriorated in value by their presence.

The best method of eradicating it is to place the seed in water before sowing, and skim off the infected grains, which will float to the top.

Cecidomyia Tritici ("Wheat-midge").

Cecidomyia, a genus of gnats, attacks both barley and wheat. It seldom, however, attacks the former in this country. The most important is the *Cecidomyia Tritici.* The British wheat midge is a species that causes great loss in some seasons. The eggs are conveyed into the glumes whilst the wheat is in flower, and when they hatch, the little lemon-coloured larvæ abstract the juices, and cause the grain to shrivel. When fully grown they enter the earth and become pupæ, and finally develop into the perfect insect.

C. Destructor ("Hessian Fly").

The *C. Destructor,* or "Hessian Fly," though considered by many a recent introduction, is probably an old enemy under a new name. However this may be, great destruction may result from its attack. Its presence in a crop of wheat or barley is usually made apparent by the breaking off of the culm at the second joint or nodule. If this is closely examined the larva will be found inside, feeding upon the interior tissues. It is difficult to see how this destructive insect can be met and destroyed; the only course seems the destruction by fire of the straw whenever its presence is known. This, practically, is impossible, as farmers cannot afford to burn a valuable product, in times like these, without recompense. If it is imported, as is supposed, from the Continent in straw, it is equally difficult to see any way of combating the evil, except by burning all the straw at the port of entry. Legislation might impose penalties, and force destruction of infected straw, but such an effort must become futile in practice.

We now come to the vegetable blights or fungi, a large class of parasites. They are the lowest order of plants and are called "Cellular" or one-celled.

Ustilago Carbo ("Smut").

Ustilago Carbo, "Smut," is one of these, and attacks all the cereals. The attack, however, takes place early, before the ear leaves the sheath. About June it is most visible, in some seasons giving quite a black appearance to the crop. It consists of a black powder, which when fully ripe is dispersed by the wind, and nothing is left but the bare culm.

The damage consists in the loss of the ear, the remaining ears being unaffected.

Tilletia Caries ("Bunt" or "Blackhead").

Tilletia Caries, "Bunt" or "Blackhead," is the most to be dreaded. It is to eradicate this that we pickle our seed-corn.

It is more readily propagated than any other of the myceloid growths. The spores (seed) are of an oily nature and adhere closely to the grains. The blue-stone or vitriol destroys the vitality of these, hence its use.

An ear infected with this pest presents a diseased appearance. The grains are transformed into a kind of black ball; when these are broken they present a mass of brown powder, which emits a fetid odour. These are the spores, and will adhere closely to every grain with which they come in contact. The injury caused is sometimes very great, as the fetid smell is transmitted to the whole sample.

Uredo Linearis ("Red-grass").

Uredo Linearis, "Redgrass" or "Rust," affects the young plants of cereals. Its attacks are most visible in April, when the young roots are beginning to spread after the long winter. Its ravages are most marked upon undrained and badly cultivated lands. It attacks the leaves in lines, and when fully developed gives off a red or yellow powder like brickdust.

Puccinia Graminis ("Mildew").

Puccinia Graminis, "Mildew" or "Mould," is a later development of the above. Few plants escape the ravages of mildew in some form, but the "wheat mildew" differs greatly from the other varieties in structure. A parasitic fungus is developed beneath the surface of the straw from a branched mycelium or root, and makes its way through the cuticle in the form of black sori. Though rare in other cereals, it is always present in wheat and many of our grasses, but it becomes injurious only under certain atmospheric influences. Heavy and flaggy crops are most liable to attack on account of stagnation from want of a full circulation of air, and this is intensified in moist and sunless seasons.

This blight attacks the straw, the grain only indirectly, through the injury to the straw and leaf. When very bad, the grain shrivels, and the straw becomes comparatively useless. In 1850 great damage was done; in some cases fully half the crop being lost.

We have no remedy but to attend to the growth of the crop.* If anything happens to check or hinder growth, or to otherwise affect the health of the plant, it is very liable to this attack.

---

* Salt used as top-dressing with nitrate of soda, or by itself, strengthens the straw, and enables it to throw off or resist this blight.

It is a matter of dispute amongst botanists whether the blight found upon the barberry has anything to do with this blight of wheat. Some affirm that the two are different in character, others that they are identical; the following extract therefore from a local paper may be interesting:

"*The Barberry and Smut.*—Wm. Carruthers, F.R.S., consulting botanist to the Royal Agricultural Society, writing to the *Mark Lane Express,* says: 'The intelligent account of the parasitic fungi found on the barberry and on our cereals, given by your correspondent in a recent issue, is in accordance with the views accepted by botanists until quite lately. See *Treasury of Botany,* new edition, 1876, page 22. But your correspondent is unaware of the very remarkable observations and discoveries made by Professor De Bary in relation to these parasites, which completely confirm the widespread opinion of farmers that the presence of the barberry had somehow to do with the production of the disease in wheat. The important results of the researches carried on in Professor De Bary's laboratory have disclosed a wonderful life history of this fungus, which I will try to place before your readers in a few sentences, without the unnecessary use of technical or scientific terms. The black spots of the parasite which appear on the straw and leaves of grasses during the autumn, and persist on the plants through the winter, consist of spores, as the "seeds" of fungi and such plants are called. The spores retain their vitality and are ready for germination in the spring. When they fall on the leaves of the barberry they push out a little root (*mycelium*), which has the power of penetrating the skin of the leaf and reaching its interior. Having secured its position it rapidly grows and soon produces the fruit, which bursts through the skin and forms the little rounded cups so well known on the barberry leaf. The minute spores of the barberry fungus do not grow unless they fall on the leaf or stem of wheat or other grass plant. When thus placed and provided with suitable moisture

Blights of Wheat, &c.

they push out their slender mycelium root. This finds its way through one of the minute stomates or breathing pores into the interior of the leaf or stem. Here the mycelium grows, and within a week or so produces spores which germinate freely throughout the summer on leaves and stems of cereals and grasses, until in the autumn their life terminates in the production of the kind of spore with which we began, which are able to endure through the winter and to reproduce the parasites in the following year to pass again through its remarkable "alternation of generations." For the important discovery and elucidation of the life history of this farmer's pest we are entirely indebted to De Bary. His labours are well known to students of botany, and your readers may remember that under the auspices of the Royal Agricultural Society he has been prosecuting investigations into the life history of the potato fungus, which still requires elucidation. It need scarcely be pointed out, as a practical result of these discoveries, that the farmer must look carefully after the barberry, and avoid as much as possible its growth.' "

Finally, we have the fungus known as

Claviceps Purpurea ("Ergot of Rye").

Claviceps Purpurea, "Ergot of Rye," which it is only necessary to mention, as it will seldom come practically under the notice of the valuer. It will in fact come more often under the notice of the grazier. It seldom attacks cereals, except rye, and this is a crop little grown in this country. It, however, attacks the grasses, especially the rye-grass, to such an extent in some seasons as to render it a matter of importance. This importance is on account of its possessing the power of causing abortion. There is no doubt that much more loss is sustained through this than is supposed. Long grass under hedgerows and in damp low bottoms is particularly liable to this attack in autumn, and though cattle will not from choice eat these dry culms, much will be consumed accidentally; much of the fungus, too, that has fallen will be taken up from the sward upon which it falls.

The appearance of the fungus is a long black horn, growing from the grain, something similar to a cock's spur. The length varies, but may be from one-eighth of an inch to one inch.

Where very prevalent, the grass should be cut and burned. It is, however, a good plan, whether this fungus be present or not, to cut all long grass about the month of August or September under hedges and other places.*

---

* Our object in devoting a short chapter to the "Blights of Wheat" is to draw the attention of students and others to the necessity of considering a subject which materially affects the yield of cereals, and not to treat the matter exhaustively or scientifically. Those who desire to study more closely the life history of these interesting insect and myceloid pests should refer to the writings of such authorities as William Carruthers, F.R.S., and Charles Whitehead, F.L.S., F.G.S., in the "Journals of the Royal Agricultural Society," and other works by well-known scientific men.

CHAPTER XI.

ACCOUNTS.

SECTION I.

FARM ACCOUNTS.

ACCOUNTS KEPT BY BAILIFF—JOURNAL—CASH BOOK—LABOUR BOOK—INSPECTION BY AGENT—AGENT'S LEDGER—FARM BALANCE SHEET.

CHAP. XI. Sect. 1. *Farm Accounts.*

ALTHOUGH an ordinary knowledge of book-keeping will enable the agent to frame his own system of accounts, or to adapt himself to that approved by his principal, it will be useful to the pupil to have the matter explained by reference to some system, and we accordingly lay before him an outline of the one which we have found useful and sufficient in practice.

Accounts as kept by bailiff.

Journal.

The books supplied to the bailiff consist of Journal, Cash-book, and Labour-book. In the Journal he enters the amount of farm produce sold to the house and the various departments upon the estate; being those transactions in which no money passes. Also amount of corn, hay, or other fodder supplied to farm horses, cows, sheep, &c., corn sown, corn threshed, casualties, and any other item of intelligence which it is deemed important to chronicle.

Cash-book.

The Cash-book is a simple debtor and creditor account-book, in which are entered all cash transactions; money received for cattle, sheep, corn, or other produce, and money paid for labour, food, manure, and other outgoings.

Labour-book.

The Labour-book is ruled in columns, the first column to contain the name of the labourer, the next twelve columns for the working days of the fortnight, and one for rate of pay, concluding with columns for money total and observations.

The register of labour is kept by making a stroke with a pen every night against each man's name, if he has been at work on the farm that day. It is made up at the end of the fortnight, and, when paid, the total is carried to the expenditure side of the cash-book.

When task-work is resorted to, a separate book may be kept ruled as follows: column for name of labourer, nature of task, cost per acre or piece, acreage, amount drawn, balance due, and total payment, with a space for observations.

Inspection of books by agent.

At certain fixed periods, say monthly or quarterly, these books are forwarded to the agent for inspection and posting. At the same time all vouchers relating to the farm are given in; these, however, are not numerous in farm transactions.

Examination and posting of farm-books.

When given in, the agent examines each book thoroughly, correcting the totals, carrying out and checking the calculations, and otherwise submitting them to close scrutiny.

Agent's farm-ledger.

This being done, the agent will proceed to post each book in his ledger. There are but few debtor and creditor accounts necessary in farm transactions, as most are conducted upon pure cash principles. The ledger is therefore used more as a book in which to summarise the various transactions. The various ledger headings may be somewhat as follows: Wheat sold, wheat bought, barley or other corn sold or bought, cattle or other live stock bought or sold, purchased foods, manures, incidental expenses, labour, rates and taxes, and any other which may from time to time seem necessary.

Each item then from the foregoing books is duly carried to its respective heading, and ticked off. The books are then signed by the agent and returned to the bailiff. If any entry is incorrect, or in the event of any omissions, notes must be made, with reference to the page upon which they occur, and corrections or explanations be required.

At the end of the financial year, the ledger will thus contain all the necessary materials to form a balance account, except, of course, the valuations, which have been already explained both in the chapter relating to "Valuations" and in that upon the "Home Farm."

Farm balance account.

The valuation then having been made, the method of arriving at the "balance" is as follows:—The expenses of the farm are taken from the ledger and placed in order on the debtor or left-hand side of the sheet, the receipts then are taken and placed upon the creditor or right-hand side of the sheet. Upon the debtor side, and generally as the first entry, is placed the total amount of the valuation of stock of the previous year, because for the purpose of the account the farmer is for the time being to be treated as an incoming tenant and as having purchased this stock. On the creditor side, as the last entry, is placed, the total amount of valuation of stock of the year in question, the farmer being in this case an outgoing tenant, the amount representing the sum which he supposes he would receive if immediately sold.

These two columns then cast up, will show, by subtracting one from the other, the balance for the year; whether a "profit" or a "loss" will depend of course upon which column is in excess of the other.

It must be borne in mind that all transactions relating to the consumption or use of home-grown produce should be entered upon both sides of the balance-sheet; for, if the farm uses corn which has been grown upon the farm, the farm is to be treated as having sold it on the one hand and bought it on the other, otherwise the balance account will not fairly represent the year's transactions.

CHAP. XI.
Sect. 1.
Farm Accounts.

Another important matter is the charging of interest (generally 5 per cent.) upon the capital employed, *i.e.*, the amount of the valuation of the preceding year. It is clear that, before a correct result can be arrived at, the interest which could be obtained by simple investment, or which a farmer would have to pay if he borrowed his capital, ought to be deducted before striking the balance. The result then shows the profit or loss obtained purely by agricultural pursuits.

We may conclude the subject of farm accounts by giving an example of a balance sheet:

Dr.	£	s.	d.
To Valuation of Live and Dead Farming Stock and Tillages, March 24th, 1900	4236	0	0
Sheep purchased	293	0	0
Rams ,,	30	15	0
Pigs ,,	32	6	0
Seeds ,,	125	4	3
Seed Wheat ,,	21	0	0
Manures ,,	181	5	0
Food grown and consumed (Hay and Corn)	687	0	9
Seed grown and used on Farm	103	6	0
Oil and Cotton Cake, Meal, &c., purchased	236	10	4
Blacksmith's and Foundry accounts	79	12	0
Coal	8	0	0
Implements	11	0	0
Beer for Harvest and Hay-time	26	6	0
Harness Account	19	8	2
Incidental Expenses, including Auction Expenses and carriage of Cattle	55	14	4
Rates and Taxes	120	1	7
Tithe Rent-charge	150	0	0
Bailiff's Wages	65	0	0
Labour	705	9	8
Rent	500	0	0
Interest charged on capital, 5 per cent.	211	16	0
Profit	453	17	6
	£8352	12	7

Cr.	£	s.	d.
By Cattle sold	717	3	10
Sheep	507	0	0
Pigs	105	0	0
Poultry	6	0	0
Wool	166	15	0
Wheat	457	2	6
Sundry receipts	14	1	8
Food grown and consumed (Hay and Corn) as per contra	687	0	9
Seed grown and used as per contra	103	6	0
HOUSE ACCOUNT.			
Dairy Account	111	8	7
Sheep	195	13	3
Bullocks	18	0	0
Pigs	92	7	6
PRIVATE STABLE ACCOUNT.			
Hay and Straw	237	10	0
Oats and Bran	145	10	0
Barley, Wheat, Straw, &c., sold, Keepers and Garden	121	4	0
Hire of Farm Horses for House and Estate work	198	0	0
Valuation of Live and Dead Farming Stock and Tillages, March 25th, 1901	4469	9	6
	£8352	12	7

SECTION II.

ESTATE ACCOUNTS.

OBSERVATIONS — CLERK OF WORKS' ACCOUNTS — FORESTER'S ACCOUNTS—AGENT'S ESTATE ACCOUNTS.

Chap. XI. Sect. 2. *Estate Accounts.*

ESTATE accounts proper are those which relate to woods and forests, building and repairs, and the income derived from the letting of land, quit and chief rents, &c., and the expenditure required for rates, taxes, and maintenance. We will first consider the accounts kept by the clerk of the works.

Clerk of the works.

The clerk of the works has little to do with sales; his books, on most estates, relate to expenditure for labour and purchase of material. The plan we adopt is to require a statement each quarter of each man's work with a summary and total; for instance, the carpenters or bricklayers, when and at what work they have been employed; sawyers, what they have sawn, the measurement and price; brickmakers, the number of bricks made and the price; bills paid for various items, for which vouchers must be given, and other details requisite for full information.

These particulars are rendered quarterly, and are duly examined and posted by the agent into his ledger. During the quarter, if necessary, an advance is made, which is deducted from the total at the end of the quarter. The posting should be so arranged that from the ledger every detail can be obtained; for example:—if the men have been employed at any special work, building a cottage, stable, or other work of like nature, the cost of each class of labour should be ascertained from the ledger.

Forester.

The accounts of the forester we also obtain quarterly. They consist of statements of labour, with the amount of timber, bavins, poles, &c., cut for use upon the estate; also timber, bark, underwood, thinnings of plantations, &c., sold or for sale; number of trees bought for nursery, number planted, where and when, and every other detail of this character.

CHAP. XI.
Sect. 2.
Estate Accounts.

Steward's estate accounts.

The foregoing books of the clerk of the works and forester are examined by the agent, and the results carried to his ledger, under such heads as the following: "Carpenters," "Bricklayers," "Brickmakers," "Woodmen," "Timber cut for use on estate," "Timber or bark sold," "Underwood sold." At the end of the year statements as follows are forwarded to the principal.

STATEMENT OF ESTATE LABOUR.

	£.	s.	d.
Woodmen	237	14	11
Brickmaker, 99,000 bricks	67	10	0
Carpenter	109	10	0
Engineer	46	16	0
Bricklayers	108	7	0
Sundry Work	56	9	4
Sawyers	91	8	1
Estate petty Cash (Clerk of Works)	26	2	4
*Hire of Horses from Farm	198	0	0
Coal, Lime, Hair, &c.	19	16	6
	£961	14	2

STATEMENT OF TIMBER, BARK, AND COPSE SALES, 1900.

	£	s.	d.
140 Beech Trees sold	363	0	0
Smaller	13	14	6
30 tons of Bark	112	19	0
Oak (40 loads)	153	0	0
Ash	6	0	0
Bavins sold to Labourers	47	2	0
7600 Oak Bavins	41	16	0
20 acres of Underwood	142	10	11
	£880	2	5

TIMBER, BAVINS, &C.

Made and in Use upon the Estate, 1900.

	£	s.	d.
20 loads of Oak	95	8	4
Larch Poles	127	16	0
Ash	11	17	2
Beech	82	10	0
13,000 Kiln Bavins	32	10	0
3250 Sale and House Bavins	17	17	6
Elm	8	0	0
	£375	19	0

---

* See Balance Account.

CHAP. XI. Sect. 2. *Estate Accounts.*

In his own special department the agent's accounts will consist of rents received, allowances for taxes to tenants, quit rents paid or received, fines, heriots, royalties, or other charges or receipts of similar nature, payment of material accounts, or of landlord's rates, taxes or tithes; everything in fact paid or received should be carefully and systematically posted into the ledger from the various books under their respective headings, so that at a glance any particular can be at once obtained.

It will be seen from the foregoing remarks that our object has been, not to lay down a plan with a quantity of ruled pages as examples, and to encourage intricate systems of accounts in the various departments; such systems will make the subject wearisome at once to him who keeps them, and to him who peruses them. The object to be arrived at is, simplicity coupled with accuracy, so as to enable the various officials to account methodically, but without causing them needless labour.*

Auditor.

Every agent should, within three months after the expiration of the financial year, submit all his books to an auditor. The auditor will require proof of the receipt of every credit entry, and vouchers for every payment, no matter how small; all incidental expenses for which vouchers do not exist must be enumerated in a certificate signed by the agent. In the event of the system of auditing accounts being adopted for the first time, it will save a heavy amount of labour if the principal accepts in writing the amount carried forward.

The certificate of the auditor, which will be written in the books, will clear the agent from responsibility up to that date. It will therefore be seen that vouchers should be required for every payment made, no matter how small, and such entries made in the books as will serve as proofs of receipts of money.

---

* All students should make themselves acquainted with *Double Entry*; for, although it is not often resorted to in farm or estate accounts, it is the basis of all sound book-keeping A knowledge of it acts as a key to almost every intricate system.

CHAPTER XII.

USEFUL RULES OF ARITHMETIC AND MENSURATION.

ALTHOUGH we have already given some rules of calculation in the chapters upon Farm Valuations and upon Repairs and Material, it is possible that the student, whose memories of his school or college experience are not so fresh as they should be, may find it useful to have some rules of arithmetic and mensuration presented to him in a handy form. We have therefore selected the following rules from well-known works upon those subjects :—

DECIMALS.

Decimals.

Ciphers on the right hand of decimals make no alteration in their value, for ·5, ·50, ·500, and so on, are decimals of the same value, being $\frac{5}{10}$ or $\frac{1}{2}$. But when ciphers are placed on the left hand of a decimal they decrease its value in a tenfold proportion, thus: ·5 is $\frac{5}{10}$, ·05 is $\frac{5}{100}$, ·005 is $\frac{5}{1000}$ and so on.

The first place of decimals, counted from the left hand towards the right is tenths, the second hundredths, the third thousandths, the fourth ten-thousandth parts, and so on.

Addition of decimals.

Addition of Decimals.—Write down the numbers in such a manner that tenths may be under tenths, hundredths under hundredths, and so on, in which order the decimal points may stand directly under each other; then add as in whole numbers, and put a point in the sum directly under the other points.

Thus—

·253
·142
6·72
·0061
·06
149·8
156·9811

Subtraction of decimals.

Subtraction of Decimals.—Write the less number under the greater, according to the value of their places, as in addition, then subtract as in whole numbers, and place the decimal point in the remainder straight under the other points.

Thus—

67·53281
24·0234
43·50941

Multiplication of decimals.

Multiplication of Decimals.—Multiply as in whole numbers, and point off in the product as many decimal places as there are in both multiplicand and multiplier: but if the product does not contain so many figures, supply the deficiency by ciphers on the left.

Thus—

437·65
·317
3·06355
4·3765
131·295
138·73505

Division of decimals.

Division of Decimals.—Divide as in whole numbers, and point off as many decimal places in the quotient as the dividend has more than the divisor; but if there be not as many places in the quotient, put ciphers on the left to supply the defect; and if the dividend has not as many places of decimals as the divisor, annex ciphers until they are equal, before commencing to divide. By annexing ciphers thereto the division may be prolonged, so that the quotient may be brought to any required degree of exactness.

Thus—Divide 63·2871 by 5·25.

```
5·25)63·28710(12·054
      525.
      ----
      1078
      1050
      ----
        2871
        2625
        ----
          2460
          2100
          ----
           360
```

Reduction of decimals.

Reduction of Decimals.—A Vulgar or Common Fraction is reduced to its equivalent decimal by dividing the numerator of the fraction by the denominator, and the quotient is the decimal required, having its value decreased by as many ciphers, less one, prefixed as may have been annexed to the right hand to form a dividend. Thus $\frac{1}{2}$ is 1·0 divided by 2, or ·5; $\frac{1}{8}$ is 1·0 divided by 8, or ·125; $\frac{1}{12}$ is 1·00 divided by 12 or ·0833, &c.

Any number of moneys, weights, or measures of a lower denomination may be reduced to the decimal of a higher denomination by dividing the number of the lower denomination by the number of which it is contained in the higher; or a decimal of money, weights, or measures, may be brought to its proper terms in a lower denomination, by multiplying the decimal by the number of the lower denomination contained in the higher, and pointing off the same number of places of decimals in the product; and the remaining decimal reduced to its proper terms in a still lower denomination by a similar process.

Thus, to reduce twelve shillings to the decimal of a pound sterling—

Divide 12·0 by 20, which is ·6.

Again, to reduce ·625 of a pound sterling to its proper terms, multiply ·625 by 20 and the product is 12·500 shillings; and ·500 or ·5 multiplied by 12 is 6 pence; viz., ·625 of a pound is 12*s.* 6*d.*

DUODECIMALS.

Duodecimals.

As decimals are tenths, so duodecimals are twelfths of an integer; and as each succeeding inferior place in a decimal decreases in value in a tenfold proportion, so each succeeding inferior place of duodecimals are twelfths of unity, expressed by ′, and called "primes"; the seconds are 144ths of unity, expressed by ″, and called "seconds"; the thirds are 1728ths of unity, expressed by ‴, and called "thirds," and so on.

Multiplication of duodecimals.

Multiplication of duodecimals is chiefly used by artificers in computing superficial and solid contents from dimensions taken in feet and inches. In the operation,

Feet multiplied by feet give feet.
Feet multiplied by primes or inches give primes or inches.
Feet multiplied by seconds give seconds.
Primes or inches multiplied by primes or inches give seconds.
Primes or inches multiplied by seconds give thirds.
Seconds multiplied by seconds give fourths.
Seconds multiplied by thirds give fifths, and so on.

Having placed like denominations or places in the multiplicand and multiplier under each other, multiply the lowest place in the multiplicand by the highest place in the multiplier, dividing the product, if above 12, by 12, setting down the remainder, and carrying the quotient to the result of the next lowest place in the multiplicand, multiplied by the highest place in the multiplier, proceeding, as before, to divide such result by 12, setting down the remainder, and carrying the quotient to the result of the next lower place

CHAP. XII.
Rules of Arithmetic, &c.

of the multiplicand, multiplied by the highest place of the multiplier; and so proceed to multiply the places in the multiplicand in their increasing order, until the highest place in the multiplicand comes to be multiplied by the highest place in the multiplier; after which proceed with the less places in the multiplier in the same manner; then add the like terms together, carrying all completed twelves from the lower to the higher denomination.

Thus—

	Ft.	′	″		Ft.	′	″	‴
	8	9	0		30	7	6	0
multiplied by	3	6	0		2	3	0	0
	26	3	0		61	3	0	0
	4	4	6		7	7	10	6
is	30	7	6		68	10	10	6

The result 30ft. 7′ 6″ of the first part of the foregoing example of the process of multiplication of duodecimals may be supposed to be the superficial area 8ft. 9in. long by 3ft. 6in. wide; and the result 68ft. 10′ 10″ 6‴ of the other part of the example may be supposed to be the cubic content of the three dimensions of 8ft. 9in. long, 3ft. 6in. wide, and 2ft. 3in. deep. If in the last result the 68ft. be divided by 27 it will then be 2 cubic yards 14ft. 10′ 10″ 6‴.

FRACTIONS.

Fractions.

A fraction or broken number is an expression of a part, or some parts of an integer or whole number. It is denoted by two numbers placed one below the other with a line between them thus—$\frac{3}{4}$. The number below the line is called the denominator, as showing how many parts the integer is divided into; and the upper number the numerator, as enumerating how many such equal parts it contains; and in this form it is called a vulgar fraction. Another form of fraction, called a decimal, is when the denominator is unity, with as many ciphers annexed to the right hand as there are figures in the numerator; and it is usually expressed by the numerator only, with a point prefixed: Thus, $\frac{3}{10}$ is written ·3; $\frac{23}{100}$ ·23, and so on.

The mode of reducing or converting vulgar fractions to their decimal form will be found upon p. 317.

TO FIND THE AREA OF CIRCLES.

Circles.

Rule 1. Multiply half the circumference by the radius (half the diameter), and the product will be the area. Or, divide the product of the whole circumference and diameter by 4, and the quotient will be the area.

Rule 2. Multiply the square of the diameter by ·7854, and the product will be the area.

Rule 3. Multiply the square of the circumference by ·07958, and the product will be the area.

* πr^2 = area, *i.e.*, 3·1416 × the radius squared.

USEFUL RULES RELATING TO CIRCLES.

(*See* Nesbit and Ewart.)

The diameter of a circle multiplied by ·8862269, or the circumference × by ·2821577, will give the side of a square of equal area.

The diameter of a circle × by ·7071068 will give the side of the inscribed square.

The side of a square × by 1·414214 will give the diameter of its circumscribing circle.

The side of a square × by 4·442883 will give the circumference of its circumscribing circle.

The side of a square × by 1·128379 will give the diameter of a circle equal in area.

The side of a square × by 3·544908 will give the circumference of a circle equal in area.

When the diameter of a circle is 1 its circumference is 3·1416.

---

* π represents 3·1416, which is the circumference if the diameter is 1.

Circles.

When the circumference is 1 its diameter is 1 ÷ 3·1416—that is, ·3183.

The areas of circles are to each other as the squares of their diameters or their radii.

The area of a circle is equal to the area of a triangle, the base being equal to the circumference, and the perpendicular equal to the radius.

DEFINITIONS AND RULES RELATING TO TRIANGLES AND TRAPEZOIDS.

Triangles and Trapezoids.

An equilateral triangle has all its sides equal.

An isosceles triangle has only two sides equal.

A scalene triangle has all its sides unequal.

A trapezoid is a four-sided figure with two of its opposite sides parallel.

TO FIND THE AREA OF A TRIANGLE.

Multiply the base by the perpendicular and divide by 2, and the product is the area required.

TO FIND THE AREA OF A TRAPEZOID.

Multiply the length by the sum of the two parallel sides and divide by two, and the product will be the required area.

SUPPLEMENT

ON THE

LAW RELATING TO LANDOWNERS AND LAND AGENTS.

INTRODUCTORY NOTES.

Second Edition.

IN the preparation of this supplement the writer has endeavoured to summarise such rules of the law as appear to have a direct bearing upon the subject-matter of the book. The intricacy of the laws of this country relating to land is, indeed, such that neither owner nor agent can be safely advised to attempt to act as his own lawyer in formal transactions respecting it. But the duties of an agent, especially in dealing with tenants, involve many informal acts in the performance of which a knowledge of some legal principles cannot be useless. Whilst the general nature of ownership in land is therefore only briefly alluded to, these principles are discussed with such detail as the space at command admits of. The passing of the Ground Game Act, 1880, has, moreover, put upon a new footing an important branch of the law in which landowners and tenants are equally interested; and a chapter upon "Game and the Ground Game Act" has consequently been added to the present edition.

F. G.

Exmouth, Devon,
September, 1881.

Third Edition.

THE talented author of this legal supplement died shortly after the issue of the second edition. The work, however, is so complete and concise that no effort has been made to improve upon it; all that has been done is to bring it where necessary up to date.

C. E. C.

January, 1889.

Fourth Edition.

The supplement remains in its original form ; but owing to recent legislation it has been carefully revised and brought up to date.

C. E. C.

October, 1895.

Fifth Edition.

As in the Fourth, so in the Fifth Edition, nothing has been done but to bring the Legal Supplement up to date; with the sole exception of the addition, with brief notes, of the Agricultural Holdings Act, of 1900.

C. E. C.

April, 1901.

CONTENTS.

CHAPTER I.

THE GENERAL NATURE OF PROPERTY IN LAND.

Page
Feudal origin of property in land 331
Legal meaning of an "estate" 331

CHAPTER II.

THE DIFFERENT KINDS OF ESTATES IN LAND.

Estate in fee simple 333
Estate tail 334
Estate for life 334
Estate for years 334
Meaning of "the freehold" 335

CHAPTER III.

MANORS; FREEHOLD AND COPYHOLD PROPERTY.

The manorial system 336
Freehold tenants of the manor 337
Copyhold tenants of manor 337
Incidents of copyhold tenure 337
Present difference between freeholder and copyholder 339
Copyhold resemble freehold interests in respect of their duration 340
Particulars of which a manor consists 340

CHAPTER IV.

THE NATURE OF A SETTLEMENT.

When land is said to be "settled" 341
The actual proprietor usually a tenant for life 342
Settlement only allowed within certain limits 342

CHAPTER V.

THE MANAGEMENT OF A LIFE ESTATE.

Page

Voluntary waste 344
Cutting timber........ 344
What trees are timber........ 345
Exception to rule against cutting timber........ 345
Trees which tenant for life can cut 346
Property in timber which has been cut........ 346
Property in trees, not timber, which have been cut 347
Timber for repairs 347
Working minerals........ 347
Other acts of voluntary waste 348
Permissive waste—neglect to repair........ 348
Equitable waste 349
Leases 349
Sales 350
Works of improvement 351

CHAPTER VI.

LANDLORD AND TENANT.

Section 1.

Tenancy and the Mode of its Creation.

Tenancy at will........ 353
Tenancy from year to year........ 354
Notice to quit 454
Form of notice to quit........ 355
Tenancies for longer periods 356
In what cases a deed is necessary 356
Unsealed writings or memoranda may be— 358
  (a) leases 358
  (b) agreements to grant or accept leases 358
Stamps on leases 359
Costs of the lease........ 359

Section 2.

Rights incident to Tenancy by Law and Contract.

Payment of rent 360
Distress 361
  What goods are distrainable........ 361
  Mode of effecting a distress 361
Other remedies to enforce payment of rent 362
  Covenant to pay 362
  Proviso for re-entry or forfeiture clause 363
    ,, relief against forfeiture 363
    ,, waiver of forfeiture 363
Rates, taxes, and assessments 363

Repairs— Page
Landlord's liability ... 366
Tenant's liability ... 366
Covenants to repair ... 367
Damage by fire and tempest ... 367
Insurance ... 369
Assignment and underletting ... 369
Cultivation ... 370
Consumption of hay, straw and manure ... 370
Waste—
in respect of minerals ... 371
in respect of trees and underwood ... 371
in respect of pasture or other land ... 372
in respect of fences ... 372
Property in fences ... 373
Game ... 373
Fixtures ... 373
What is a fixture ... 374
Tenant's fixtures ... 374
Agricultural fixtures (St. 14 & 15 Vict. c. 25) ... 375
Agricultural Holdings Act, 1883, s. 34 ... 376
Application of latter Act ... 376

SECTION 3.

Tenant Right.

Right to emblements ... 382
Right to compensation according to custom of country ... 383
Right to compensation under Agricultural Holdings Act, 1883 ... 384

SECTION 4.

The Agricultural Holdings Act, 1900.

Introduction to section ... 397
The Act ... 399
First schedule ... 403
Second schedule ... 405
Third schedule ... 408

CHAPTER VII.

GAME AND THE GROUND GAME ACT, 1880.

Property in wild animals generally ... 409
Meaning of the term "game" ... 410
Right to game as between landlord and tenant ... 411
Ground Game Act, 1880 (text of the Act) ... 412
Object of the Act ... 414
Nature of the right conferred upon the occupier ... 415
Restrictions on its exercise ... 415

Ground Game Act, 1880—*continued.* Page
  Person authorised by occupier to be a member of his household resident on the land 416
    or an ordinary servant 417
    and not a stranger except one stranger employed for reward 417
  The form of authority to be given by occupier 418
  Who is to be deemed an "occupier of land" 418
  Occupiers' right with regard to moors 419
  The new right as contrasted with other and more extensive rights 419
  Game licences 420
  Effect of the Act on existing contracts 424
  Effect on general law 424

CHAPTER VIII.

THE AUTHORITY OF A LAND STEWARD.

Transactions with agents generally 426
General and special agents 427
In what sense a land steward is a general agent 428
Cases in which a special authority may be necessary 430
  Leases 430
  Notice to quit 430
  Distress 430
  Sales 430
  Purchases 431
  Appointment of sub-agents 432
Mode of signature by agent 432
Personal liability of agent 432
Ratification of unauthorised acts 433

CHAPTER I.

THE GENERAL NATURE OF PROPERTY IN LAND.

CHAP. I.
The General Nature of Property in Land.

Feudal origin of property in land.

It is necessary at the outset for the student to understand that the English law knows of no such thing as absolute property in land. Under the feudal system, which we read of as prevailing in this country in the time of our Norman and Plantagenet kings, every possessor of land was considered to be the *tenant* (or "holder") of the land under some superior lord to whom he was bound to render military or other services in respect of the land he held. So that the possessor was not the *owner* of the land. Still less could the lord be called the owner; for not only was he generally powerless to interfere with the possession of the tenant, so long as the terms as to services or rent were duly observed, but he also was, in respect of the land over which his lordship extended, the tenant of some lord higher up in the scale than himself, to whom he in like manner was bound to render services, the chief part of such services consisting in bringing together at his lord's summons a certain number of his tenants, ready armed, to follow the lord to battle. It may be said, speaking generally, that every proprietor in the kingdom was a tenant, except the king, who was lord paramount over all.

Legal meaning of an estate.

Thus it is that the law, which was framed by feudal lawyers, still regards land as the subject-matter of *tenure.* When speaking of a horse or any other chattel, it speaks

The General Nature of Property in Land.

of ownership. But technically it does not talk of the owner of land, because it does not conceive that any person can own it in the same way in which he owns a horse. Although in popular language a tenant is a man who obtains an interest in a house or farm by hiring it for a definite period, in legal phrase every proprietor is a tenant or holder of the land. He may be, however, and is, called in law the owner of that particular interest in it which he holds, that interest, whatever it may be, being called an *estate*. Thus the lessee for fourteen years of a farm clearly does not, in any sense, own the farm; but legally he owns an estate for years in the farm; and his landlord is considered in law not as owning the farm, but as being the owner of another estate or interest in it—an estate which, as we shall see, may vary considerably in its qualities and duration. The distinction between the legal meaning of an estate as an *interest in land* and its popular use in which it signifies *an area of land*, is most important, as nothing can be understood of the land laws without attending to it.

CHAPTER II.

THE DIFFERENT KINDS OF ESTATES IN LAND.

THE following are the most important of the different kinds of interest which may be had in land:—

Estate in fee simple.

An *estate in fee simple* is the largest interest in land which can be had, and the man who has the fee simple has at the present time what practically amounts to absolute property. For his interest is one which lasts for ever; he can dispose of it by deed or will as he pleases; and although the law still calls him a *tenant* in fee simple, it is but rarely that any of the burdens or symbols of tenure attach to his estate. He obtains such an estate by a grant of land to *him and his heirs* (the word grant being applicable whether he takes by purchase or gift, or in any other way).

It is important to observe that some one or other is always the owner of an estate in fee simple in every piece of land, although the actual proprietors of the land may only have one of the smaller estates which are specified below. For instance, if A., the owner of the fee simple, grants an estate tail to B., B. would be called the proprietor. But although A. has thus parted with the present proprietorship, he has not parted with all his own estate, for an estate tail is smaller than an estate in fee simple. The fee simple remains in him, and will entitle him to take possession again so soon as the estate tail comes to an end.

Estate tail.

2. *An estate tail* is that which passes by a grant to a man *and the heirs of his body*. The owner is called a *tenant in tail*, and when land is so granted, it is said to be *entailed.* The estate lasts so long only as the tenant in tail has heirs of his body, in other words, so long as his children or the descendants of his children are living; and, so long as it remains as an estate tail, the owner of it has no power to dispose of it beyond his own lifetime. But the peculiarity of the estate is that the person who has got it, and is in possession of the land in right of it, may by a special process (the enrolling of a deed in Chancery) turn it into an estate in fee simple. This process is called disentailing the land. In the instance above given of a grant by A. of an estate tail to B., in the ordinary course of things, on B.'s death without children, the estate tail would come to an end, and A. would take possession again in right of his fee simple. But if B. in his lifetime had disentailed the land, he would thereby have acquired the fee simple, A.'s interest would have been destroyed, and the land would pass under B.'s will, or, if he died without a will, would go to his heir whoever he might be—for he might have an heir (for instance, a cousin), although not an heir of his body. We thus see that the prevalent idea that, when land is entailed, it must remain in the same family from generation to generation is entirely false.

Estate for life.

3. *An estate for life*, the name of which sufficiently describes it for the present purpose. But it may be noticed that a life estate is not always of the same duration as the life of the owner. For if A. have an estate granted to him for his life, he may grant the estate away to B., and then B.'s estate lasts as long as A. lives.

Estate for years.

4. *An estate for years*, under which term may be included all interests of lessees or persons who, in the popular sense of the word are tenants; in other words, all *leasehold* property. An important practical difference between this kind of estate and any other lies in the fact that the law does not regard it as real or landed property at all; it

does not allow it to pass on the owner's death to his heir, but it goes to his executors in the same way as do his stock and money. Ordinary language adopts a similar distinction; for though a man is called a "landowner," if he holds for life, or in tail, or in fee simple, he is hardly so called if he is only a tenant under a lease.

Meaning of the freehold.

A free-man never held an estate less than a life estate. Hence it is that the immediate holder of a life estate, or of any greater estate in land of free tenure (to be directly referred to), is said to have the *freehold.*

CHAPTER III.

MANORS; FREEHOLD AND COPYHOLD PROPERTY.

Chap. III.
Manors; Freehold and Copyhold Property.

The leading division of landed property into freehold and copyhold property is specially illustrative of what has been already said with regard to the general nature of property in land.

The manorial system.

The *lord of a manor*, with whose rights and claims copyholders are familiar enough, has the lordship which belonged to the old feudal lord, although the course of civilisation has altered or abolished the feudal services. The manor over which the lordship extended seems in feudal times to have consisted of three parts. Firstly, there was the lord's *demesne*, which was that part of the manor which he reserved for his dwelling, or for his other private purposes—that part which, in modern phrase, he "kept in hand." Secondly, there was the portion of the manor which had been granted out to, or was held by, the lord's free tenants, who held upon the terms of rendering him some regular and certain services, and were called the *freehold* tenants of the manor, or freeholders. They held estates for life at the least, an estate for life being the smallest which it became the dignity of a freeman to accept. And lastly, there was the *waste* of the manor, which served as a grazing ground for the cattle of both lord and tenants.

Freehold tenants of manor.

Copyhold tenants of manor.

The copyholders probably had no place in the original manorial system, and appear to have originated in this way:—The villeins or slaves whom the lord kept to till his own demesne were rewarded for their services, or at least had granted to them, as a means of subsistence, small plots of the demesne to cultivate on their own account, but upon the terms of their still giving to the lord either the amount of manual labour required upon the rest of the demesne, or some share of produce. But the grants were only to hold "at the will of the lord," and were determinable at the lord's pleasure. Gradually, however, custom, or the general practice of the particular manor, was recognised as regulating the condition of these persons in respect both of the services or share of produce required of them and of the duration of their interest. Their holding, instead of being at the will of the lord simply, was said to be at the will of the lord "according to the custom of the manor." As the grants made to them were made at a manor court, and were entered by the lord's steward upon the roll or record of the court's proceedings, and as a copy of this roll constituted their only title deed, they came to be called holders by copy of court roll, or copyholders. As such they acquired rights as secure as, though different in kind from, those of the freeholder. The lord's claim to services or produce gradually assumed the form of a fixed, small rent of some kind, now called a quit rent. But their position still depended upon the custom of the particular manor of which they held, whilst the position of the freeholder was ascertainable by reference to the general law of the realm; and, although the customs of different manors became in time subject to some general principles of uniformity, consequent on the power possessed by the law courts to give them a reasonable meaning and application, it yet remains true that custom is the life of copyhold tenure.

Incidents of copyhold tenure.

The most important difference between the freeholder and copyholder is that the lord has no *estate* in the freehold lands of his manor, for the lordship, or lord's claim to

CHAP. III. *Manors; Freehold and Copyhold Property.*

rent and services in respect of them does not amount to an estate in the land. But the lordship carries with it the estate in fee simple in the copyholder's land, for even when the copyholder's interest became permanent, the law did not consider it as an interest in any way interfering with the existence of the fee simple. The copyholder only had a sort of customary right of enjoyment, and the property in the land and in the minerals, timber, buildings, and everything else under or affixed to it* belonged to the lord, although the copyholder's right of enjoyment precluded the lord from entering upon the land either to dig the minerals or to cut the timber. So also the copyholder had no power, except with the lord's concurrence, to let his land beyond the term of a year, unless there was a special custom of the manor authorising leases to be granted. And when the copyholder came to claim an interest in his holding beyond the term of his own personal occupation, so that it might be transferable (as may be the freeholder's) to his heir or devisee on his death, or to a purchaser from him in his lifetime, the lord was able originally to impose his own terms as a condition of allowing the transfer to take place. This he did by exacting a *fine* before *admitting* the new holder or tenant. By the custom of some manors this fine became fixed in amount, but in others was left arbitrary, or dependent on the will of the lord. But the courts have held that even arbitrary practice must be reasonable, and that in no case shall the fine exacted be of larger amount than two years' improved value of the land, after deducting quit rents, but not land tax.

In addition to *quit rents* and *fines*, the right of the lord to claim *heriots* on the death of his tenant is another frequent incident of copyhold tenure. The heriot is the best beast or other chattel belonging to the deceased tenant, and the right may probably be a survival from the time when the tenant himself was the lord's *villein* or chattel, and consequently all his chattels were regarded as the lord's. Having regard to the rights of the lord, as above referred to, in the copyholder's lands, and to the fact that other pecuniary dues, and sometimes personal services, may be authorised by the customs of particular manors, it is obvious that the management of copyhold property, and dealings for the purchase or sale of it, involve considerations which do not arise in the case of freeholds, and that the customs of the individual manor must frequently be ascertained from the steward of the manor (generally a solicitor in the neighbourhood) or by examination of the court rolls.

---

* *Vide post.*

Present difference between freeholder and copyholder.

This original distinction between the two kinds of property has been increased by the lapse of time. For, as the freeholder has the whole estate in his land, the relation of lord and tenant was gradually lost sight of when the progress of order and civilisation made it of little importance to either party. Thus the greater number of freehold tenants became independent of their lords altogether. In many instances, however, the relation of dependence is still traceable in the annual payment of nominal value claimed by the lord and called a *quit* rent, or rent by which the tenant became quit of all other manorial claims upon him. The small amount of this rent, where it is claimed, is of course due to the difference in the value of money at the present time and its value several hundred years ago when the rent was fixed. On the other hand, this severance of the connection with the lord was impossible in the case of the copyholder; for the lord had the fee simple. Moreover the copyholder could not dispose of his interest by deed or will alone (as could the freeholder), but only by a transfer upon the court rolls of the manor, and the lord is generally allowed, as we have seen, by the custom of the manor to impose a heavy fine upon every transfer; so that there existed both the means and the motive for keeping the copyholder in the inferior position which he still occupies.

Copyhold resemble freehold interests in respect of their duration.

There is, however, one particular in which the copyholder's interest resembles the freeholder's, and that is in respect of its duration. For the different estates in land which might be had by the freeholder, and which we have enumerated, served as the models for the interests which should be taken by his inferior neighbour; and the words of grant which were regarded as making the freeholder's estate an estate to last for life, or for years, or for ever, were held to create interests of similar duration in the case of the copyholder. Yet when a copyholder holds lands to "him and his heirs according to the custom of the manor of X.," he does not, as we have seen, really hold the fee simple; he is sometimes said to have a copyhold fee simple. But it is clear from what we have said that there cannot be such a thing as a copyhold fee simple; and the term is only applied to the copyholder's interest because there is no other short term to make use of.

Particulars of which a manor consists.

What has been already said as to the nature of a manor and the lord's rights over the freehold and copyhold tenants of it, will suggest the particulars upon which the value of a manor will depend. There are, firstly, the lord's demesne lands, which have now frequently become separated from the manor altogether, and which, if they still constitute a part of it, are, in the hands of the lord, property of the same kind as any other freehold lands which belong to him. Secondly, there are the quit rents or other dues which, where the tenure has been kept alive, are due from the freeholders of the manor. Thirdly, the lord's rights in the lands of the copyholders, and to the customary fines, heriots, rents, dues, and services from the copyhold tenants. And, fourthly, there is the lord's interests as owner of the soil of the manorial waste, but subject to the rights of the tenants to common upon it.

CHAPTER IV.

THE NATURE OF A SETTLEMENT.

When land is said to be settled.

WHEN a man has an estate in fee simple in a hundred acres of land, there is one mode of dividing his interest which is at once apparent—he may cut the land up into smaller plots and grant it away piecemeal. In other words, he may divide the area. But there is another way of dividing his interest which the law gives him, which is not so apparent. He may, without dividing the area, cut his *estate* or legal interest in it to pieces by granting a number of smaller estates or interests in the whole area to different persons in succession, or, as the law calls it, *in remainder*. For instance, he may execute a deed or will granting a life estate in the land to A., and after A.'s death, an estate tail to A.'s son B.; and when that estate comes to an end (by reason of B. and all his issue having died) another life estate to C., with another remainder to C.'s son D. in tail, and so on to any number of persons in succession, until he concludes by granting the fee simple, after which there is nothing left in him to grant. Each of the persons to whom an estate is thus given is called, until he comes into possession, a *remainderman*. When land is subject to a deed or will whereby estates in remainder are granted in this way it is said to be settled. As the greater part of the land in this country is settled, it is important for the agent concerned with the management of it to understand the nature of a settlement, and what is the position of the proprietor for whom he acts.

The actual proprietor usually a tenant for life.

It may be said, speaking roughly, that almost every large landed proprietor in this country is only a tenant for life, and the reason for this state of things is not very difficult to explain. If the proprietor held, as he is commonly supposed to hold, an estate tail, he would, as we have already seen, be practically at liberty to dispose of the land as he liked, for he could always disentail it. But it is to be observed that it is only when he is in actual possession of the land in right of his estate tail that he can thus disentail it, and defeat the rights of all the remaindermen that come after him. Until he is so in possession the disentailing process requires the concurrence of the person who has the possession. Referring to the example above given, B. alone cannot, during the lifetime of A. the tenant for life, disentail, so as to turn his estate, which is an estate tail in remainder, into an estate in fee simple in remainder. But A. and B. together can disentail at any time, and acquire the fee simple between them, or B. can disentail alone when he takes possession after A.'s death. Now it will generally be the object of A., who is in enjoyment of the family property, to keep it in the family, and to put it for ever out of his son B.'s power to acquire the fee simple and sell it; and B., as a young man imbued with the like ideas of preserving the family heritage, is scarcely likely to offer any obstacle. Accordingly, as soon as B. comes of age, A. and B. join in disentailing the land and acquiring the fee simple; and then, having between them the power to dispose of the fee simple or whole interest in the land as they like, they at once execute a fresh settlement whereby a life estate is again given to A., then another life estate (instead of an estate tail) to B., and after that an estate tail to B.'s unborn son.

Settlement only allowed within certain limits.

It is nothing, therefore, in the law of entail which prevents land from being sold or disposed of. But the persons who have the power to dispose of it prefer to exercise their power by cutting down their own interests to life estates and vesting in an unborn person the estate which will carry

The Nature of a Settlement.

a power of disposition with it; so that the land is tied up till that person comes into being and attains his majority. The law, however, only allows estates to be given to the next unborn generation. If they could be given, not only to that generation, but to its unborn children, and so on indefinitely, it is clear that a landowner might, by giving successive life estates to coming generations, tie up the land till the millenium. As it is, it can be tied up for a great many years; for a settlement giving a life estate to a young child, with estates tail in remainder to his unborn issue, may prevent any one person from having a power of disposing of the land for nearly a hundred years. For the child might only have issue very late in life (perhaps sixty or seventy years after the date of the settlement), and it would not be till the eldest of such issue came of age that the land could be disentailed. It is usual, however, in every settlement to provide that the trustees of the settlement may sell the property if circumstances make it desirable, and in the event of such a sale the maintenance of the family dignity is provided for by a declaration that the purchase money shall be invested in other land, which shall be settled in precisely the same way, or shall be applied in paying off incumbrances on any part of the settled property not sold. Legislation* has, moreover, given similar powers of sale to the High Court of Justice, which can accordingly be applied to if a sale is desired, and the settlement does not give the means of effecting it.†

---

* The Settled Estates Act (40 & 41 Vict. c. 18), referred to *post*.

† The Settled Land Act (45 & 46 Vict. c. 38) repeals sect. 17 of the above Act, but confers extended powers upon tenants for life, who under its provision may sell, exchange, or concur in making partition.

CHAPTER V.

THE MANAGEMENT OF A LIFE ESTATE.

CHAP. V. *The Management of a Life Estate.*

It is clear that the proprietor who is only interested for his life has not the same powers in respect of the land as has the owner of the estate in fee simple, and it is therefore necessary for his manager or agent to understand in what respect his employer's powers are limited. Firstly, he must neither do nor omit anything which will materially diminish the value of the land, so as to injure the interest of the person entitled in remainder after his death; and secondly, he cannot by any act of his (except in so far as the power has been given to him by modern Acts of Parliament), bind the land beyond the period of his own life. If, for instance, he grants a lease for thirty years, and he dies before the thirty years have expired, the lessee cannot claim to hold the land against the remainderman.

Voluntary waste.

With regard to the first point, the limited rights of the tenant for life are expressed in law by saying that he has no power to commit *waste.* And waste may be either by positive act of destruction, when it is called *voluntary* waste; or by mere omission to do what is requisite for the preservation of the property, when it is called *permissive* waste.

Cutting timber.

The most important check which the law against voluntary waste imposes on the tenant for life, is in preventing him from felling timber. Timber trees whilst they are growing are considered as part of the land itself; so soon as they are felled they cease to be part of the land, and become a mere chattel. To allow a tenant for life, therefore, to cut down timber and appropriate it as his own chattel would be as injurious to the remainderman as to allow him to sell a part of the land out-and-out and pocket the proceeds. If it be clear that the timber needs cutting, the courts will on an application being made by the tenant for life, order it to be cut, taking care that the proceeds are invested so that he gets the benefit of the interest only. But it will never allow him to appropriate the timber. The law upon this subject is so admirably expressed in a judgment of the Master of the Rolls (Sir George Jessel) in a case of *Honywood* v. *Honywood* (L. Rep. 18 Eq. Cas. 309), that we shall do best by citing it at length.

As I understand the law it is this: The tenant for life may not cut timber. The question of what timber is depends, first, on the general law, that is, the law of *England*; and, secondly, on the special custom of the locality.

What trees are timber.

By the general law of England, *oak*, *ash*, and *elm* are timber, provided they are of the age of twenty years and upwards; provided also they are not so old as not to have a reasonable quantity of useable wood in them, sufficient, according to the text writer, to make a good post. Timber, that is, the kind of tree which may be called timber, may be varied by local custom. There is what is called the custom of the country, that is, of a particular county or division of a county, and it varies in two ways. First of all, you may have trees called timber by the custom of the county—beech in some counties, hornbeam in others, and even whitethorn and blackthorn and many other trees are considered timber in peculiar localities—in addition to the ordinary timber trees. Then again, in certain localities, arising probably from the nature of the soil, trees of even twenty years old are not necessarily timber, but may go to twenty-four years, or even to a later period, I suppose, if necessary; and in other places the test of when a tree becomes timber is not its age, but its girth. These, however, are special customs. Once arrive at the fact of what is timber, the tenant for life, impeachable for waste, cannot cut it down.

Exception to rule against cutting timber.

That I take to be the clear law, with one single exception, which has been established principally by modern authorities in favour of the owners of timber estates, that is, estates which are cultivated merely for the produce of saleable timber, and where the timber is cut periodically. The reason of the distinction is this, that as cutting the timber is the mode of cultivation, the timber is not to be kept as part of the inheritance, but to be considered as part, so to say, of the annual fruits of the land, and in these cases the same kind of cultivation may be carried on by the tenant for life that has been carried on by the settlor on the estate, and the timber so cut down periodically in due course is looked upon as the annual profits of the estate, and therefore goes to the tenant for life. With that exception, I take it, a tenant for life cannot cut timber; therefore I hold in this case, it not being a timber estate, that the tenant for life cannot cut timber at all.

Trees which tenant for life can cut.

The next question to be decided is, what can the tenant for life cut? The tenant for life can cut all that is not timber, with certain exceptions. He cannot cut ornamental trees, and he cannot destroy "germins," as the old law calls them, or stools of underwood; and he cannot destroy trees planted for the protection of banks, and various exceptions of that kind; but, with those exceptions, which are waste, he may cut all trees which are not timber, with again an exception, that he must not cut those trees which, being under twenty years of age, are not timber, but which would be timber if they were over twenty years of age. If he cuts them down he commits waste, as he prevents the growth of the timber. Then again, there is a qualification that he may cut down timber trees under twenty years of age, provided they are cut down for the purpose of allowing the proper development and growth of other timber that is in the same wood or plantation. That is not waste; in fact, it is for the improvement of the estate, and not the destruction of it, and therefore he is allowed to cut them down. If, therefore, in the course of the proper management of this estate, any oaks, ashes, and elms under twenty years old have been cut down for the purpose of allowing of the growth of the other timber in a proper manner, that would not be waste on the part of the tenant for life, though impeachable for waste.

Property in timber which has been cut down.

Then the only other question to be decided is, in whom is the property of the timber cut down vested? There, I think, the law is reasonably clear. If the timber is timber properly so called, that is, oak, ash, and elm over twenty years old (I am not saying anything about exceptional cases), the property in the timber cut down, either by the tenant for life or anybody else, or blown down by a storm, belongs at law to the owner of the first vested estate of inheritance (*i.e.*, estate in fee simple or tail). There is in equity an exception where the remainderman, the owner of the first vested estate of inheritance, has colluded with the tenant for life to induce the tenant for life to cut down timber, and then equity interferes and will not allow him to get the benefit of his own wrong. There is, again, a second equitable exception, and that is this: that where timber is decaying, or for any special reason it is proper to cut it down, and the tenant for life in a suit properly constituted, to which the remainderman or the owner of the vested estate of inheritance is a party, gets an order of the court to have it cut down, then the court disposes of the proceeds on equitable principles, and makes them follow the interests in the estate. In that case, therefore, the proceeds are invested, and the income given to the successive owners of the estate, until you get to the owner of the first absolute estate of inheritance, who can take away the money.

Property in trees not timber, which have been cut down.

Then we come to the property in trees not timber, that is, those which are not timber either from their nature or because they are not old enough, or because they are too old. In all those cases, I take it, the property is in the tenant for life. If he cuts them down wrongfully, and commits waste, the property is still in him, though he has committed a wrong, and would be liable to an action in the nature of waste. I am not sure that would follow in equity. My impression is that equity would say that he should not be allowed to take the benefit of his own wrong, and that he should not be allowed to take the property in those trees he cuts down. This is not the case at common law, and I am not aware that the exact point has been decided in equity.

But the point upon which his Lordship expresses a doubt—the point, namely, whether, where the tenant for life commits waste by cutting down young trees which would become timber, equity would interfere upon the application of a remainderman to prevent him from appropriating them—is a case scarcely likely to arise, as the mischief lies rather in destroying the prospect of valuable timber hereafter than appropriating the value of the young trees.

Timber for repairs.

In alluding to the exceptions to the general rule which prohibits the tenant for life from cutting timber, the judge did not refer to one which may be of some practical importance, though it had no bearing upon the case before him—the exception, namely, which entitles the tenant for life to cut down timber trees for the purpose of repairing buildings on the property where the damage has occurred in the ordinary course of decay.*

Working minerals.

The second important check which the law against voluntary waste imposes on the action of a tenant for life is in preventing him from working for minerals. He may not dig for gravel, brick-earth, stone, or clay, except in such pits as were open and usually dug when he came into the property. Nor may he open mines of metal, coal, or any other substance. But as to pits or mines open before, it is not waste for him to continue to dig them, for it has become a part of the annual profit of the land. It is a question of degree to be established by evidence whether the working of a dormant or abandoned mine is waste or not. It seems that a mine, the working of which has been discontinued for twenty or thirty years in consequence of its having been unremunerative, may, after that time, be worked by a succeeding tenant for life; but a mine, the working of which has been abandoned by the owner of the inheritance for the advantage of the property, cannot be worked by a succeeding tenant for life. For the same reasons for which it forbids the working of minerals, the law forbids the tenant for life to cut turf for sale, except in bogs previously used for that purpose.*

---

* Sect. 35 (45 & 46 Vict. c. 38) deals with the question of timber as follows: (1) "Where a tenant for life is impeachable for waste in respect of timber, and there is in the settled land timber ripe and fit for cutting, the tenant for life, on obtaining the consent of the trustees of the settlement, or an order of the court, may cut and sell that timber, or any part thereof." (2) "Three-fourth parts of the net proceeds of the sale shall be set aside as and be capital money arising under this Act, and the one-fourth part shall go as rents and profit."

Other acts of voluntary waste.

Converting arable land into wood, or wood into arable, or ploughing up ancient pasture, will likewise be waste; for such acts create a difficulty in the proof of the title. And the alteration of buildings is clearly waste; it has even been said that the building of a new house is waste; but this is a proposition which it is not necessary to discuss here.

Permissive waste—neglect to repair.

The liability of the tenant for life for permissive waste, as for allowing buildings to get out of repair, is not very clear. According to the old plan of procedure in this country, whereby one system called *law* was administered at Westminster Hall, and another system called *equity*, which had power to override the former, was administered at Lincoln's Inn, the tenant for life was clearly liable at law for permissive waste; but equity hesitated to enforce any obligation upon him in respect of it; and inasmuch as under the recent fusion of the two systems the rules of equity prevail, it will probably be difficult to fix him with a liability for permissive waste.

---

* Sect. 9 of the Act quoted deals with mining leases, and confers upon the tenant for life the power of granting such leases for a term of sixty years. It provides, however, in sect. 11 that a portion of the rent reserved shall he treated as capital money. It says: "Under a mining lease, whether the minerals leased are already opened, or in work or not, unless a contrary intention is expressed in the settlement, there shall be from time to time set aside, as capital money arising under this Act, part of the rent as follows, namely, where the tenant for life is impeachable for waste in respect of minerals, three-fourths parts of the rent, and otherwise one-fourth part thereof, and in every such case the residue of the rent shall go as rents and profits."

Equitable waste.

The above observations are, however, to be qualified by another, namely, that if, as is frequently the case, the deed or will which created the life estate declares that the tenant for life shall take *without impeachment of waste* or be *unimpeachable for waste*, he is not subject to these rigorous prohibitions, but may cut timber in a husbandlike manner for his own benefit, and open mines and commit other similar acts with impunity. Yet even in that case he is not allowed absolute freedom, for the courts will restrain him from acts of wanton damage, such as the destruction of the mansion house or the felling of ornamental timber. As such acts would be clearly inequitable, the law with a curious perversity calls them *equitable waste*, meaning, probably, that, acting in a spirit of equity, it will prohibit them.

Leases.

With regard to the inability of the tenant for life to bind the land beyond the period of his own life, two points are to be noticed. It is very usual for the deed or will by which the estate is settled to give him or the trustees of the settlement an express power of leasing for certain periods, and in that case the rights of the lessee will, of course, be good against the remainderman. Therefore, when any question of letting arises, the first point is to discover what, if any, powers of leasing are contained in the settlement. If it contains nothing which enables the tenant for life to effect the desired object, he will probably find by referring to the Settled Estates Act (40 & 41 Vict. c. 18) and the Settled Land Acts (45 & 46 Vict. c. 38; and 53 & 54 Vict. c. 69) that Parliament has supplied the deficiency.

Sect. 46 of the first and sect. 6 of the second Act, and sect. 7 of the last Act authorises the tenant for life of a settled estate *without application to the court* to grant leases of any part of the property except the mansion house and the lands usually occupied therewith, for any term not exceeding twenty-one years. Other sections of the Acts enable the court, on the application of any person entitled to any estate for life, or to any greater estate in settled property, to authorise leases for longer periods (including mining leases for sixty years and building leases for ninety-nine years). The court may direct, in authorising the particular lease, whether the tenant for life, or what other person should act as lessor, or it may order general leasing powers to be vested in the trustees of the settlement. But application to the court must be made with the consent, generally speaking, of the persons in existence who are interested in the property.*

Sales.

Whilst referring to the Act (45 & 46 Vict. c. 38), it is worth while to mention that it enables the tenant for life to order a sale of the whole or any part of any settled property, except the principal mansion house, and the demesne thereof, and other lands usually occupied therewith.† But the sale moneys will, of course, be applied for the benefit of the persons entitled under the settlement, as, by authorised investment, in the discharge, purchase, or redemption of incumbrances, or of land-tax, rentcharge in lieu of tithes, Crown rent, chief rent, or quit rent, charged or payable out of the settled land, in the payment for any improvement authorised by the Act, in the purchase of the reversion or freehold in fee of any part of the settled land, and in various other ways set forth in sect. 21 of the said Act.

---

* The Settled Land Act, 1882, however, confers special leasing powers on the tenant for life: (see sect. 12.)

† The Settled Land Act, 1890 (53 & 54 Vict. c. 69), section 10, defines "Mansion and Park" as follows:

"(1) From and after the passing of this Act, section fifteen of the Act of 1882, relating to the sale or leasing of the principal mansion house, shall be and the same is hereby repealed.

"(2) Notwithstanding anything contained in the Act of 1882, the principal mansion house (if any) on any settled land, and the pleasure grounds and park and lands (if any) usually occupied therewith, shall not be sold, exchanged, or leased by the tenant for life without the consent of the trustees of the settlement or an order of the court.

"(3) Where a house is usually occupied as a farmhouse, or where the site of any house and the pleasure grounds and park and lands (if any) usually occupied therewith do not together exceed twenty-five acres in extent, the house is not to be deemed a principal mansion house within the meaning of this section."

Works of improvement.

But it is not only with regard to leasing and selling that the Legislature has come to the assistance of the tenant for life. The system of settlement is so prejudicial to the development of the land in the bar which it creates to the free expenditure of capital by the proprietor (for a proprietor is not likely to expend large sums of his own in the improvement of a property in which he has only a life interest) that efforts have been made at various times to encourage such expenditure by empowering him to borrow money for works of improvement, and to secure the repayment of the loan by a charge upon the whole fee simple. Of these Acts we may refer to the statute 8 & 9 Vict. c. 56, whereby persons having limited interests are empowered to apply to the court for leave to make any permanent improvement by draining the land with tiles, stones, or other durable materials, or by warping, irrigation, or embankment in a permanent manner, or by erecting thereon any buildings of a permanent kind incidental to or consequential on any such operations. In the event of the applicant proving that his project is likely to be a beneficial one to all parties interested, the court will authorise a loan to be secured by a mortgage of the fee simple or inheritance; but the principal money must be repaid by equal annual instalments extending over a period which is in no case to exceed 25 years.* Other

---

* The Improvement of Land Act, 1899 (62 & 63 Vict. c. 46), sect. 1, enacts: "Where under the Improvement of Land Act 1864 (in this Act referred to as the principal Act), or under any special improvement Act, a charge is, after the commencement of this Act, authorised in respect of an improvement of land, the period for the repayment of the charge shall be such period not exceeding forty years as the Board of Agriculture, having regard in each case to the character and probable duration of the improvement, determine."

CHAP. V.
The Management of a Life Estate.

important Acts are the "Improvement of Land Act, 1864" (27 & 28 Vict. c. 114)* and the "Limited Owners Residences Act, 1870, Amendment Act, 1871" (34 & 35 Vict. c. 34), whereby other permanent improvements of a similar nature are authorised, including the erection or improvement of a mansion house, the repayment of the money borrowed for the purpose with interest thereon being provided for by means of a rentcharge for a term not exceeding 25 years.†

The powers given by such Acts have proved very useful. The proprietor or his agent desiring to further inform himself as to what facilities they offer for assisting in the accomplishment of any special work, may, instead of applying at once to his solicitor, address himself to the "Board of Agriculture, Whitehall Place, S.W.," who have the superintendence of these loans, and who will furnish him with information and forms to fill up. He may also, if he has any idea as to what are the particular Acts which are likely to aid him, obtain, for a few pence, copies of these Acts from the Queen's printers, Messrs. Eyre and Spottiswoode, East Harding-street, London, E.C., a plan which will enable him to read for himself the provisions applicable to his case.

---

* The Settled Land Act (45 & 46 Vict. c. 38) repeals this Act in part, namely, sects. 17 and 18, and (in part) 21.

† Sect. 30 of the Settled Land Act, 1882, provides as follows: "The enumeration of improvements contained in sect. 9 of the Improvement of Land Act, 1864, is hereby extended so as to comprise, subject and according to the provisions of that Act, but only as regards application made to the Land Commissioners after the commencement of this Act, all improvements authorised by this Act."

CHAPTER VI.

LANDLORD AND TENANT.

In considering the landlord's relation with his tenants, or with persons about to become his tenants, it will be well for the steward or agent to be in some degree acquainted with (1) the formalities requisite to create a tenancy; (2) the rights which the *law* gives to the parties so soon as a tenancy of any kind is created; and (3) the way in which these rights are usually modified by *contract* when the letting is effected by a written instrument. After discussing the first point we shall briefly consider the two latter together; and we shall finally make some remarks upon the subject of tenant-right.

SECTION I.

TENANCY AND THE MODE OF ITS CREATION.

Chap. VI.
Sect. 1.
Tenancy and the Mode of its Creation.

Tenancy at will.

The lowest position which the occupier can hold is that of a mere *tenant at will*, in which case each party is free to determine the relation at pleasure. But the law always leans against a tenancy of this kind, and the practice of the parties with reference to the time of payment of rent, or the general custom with regard to letting such property as is the subject of the tenancy will generally furnish evidence of a letting for some period or other. If, for instance, it is a house, and rent is paid monthly, it will be regarded as a monthly tenancy; if a furnished lodging in a seaside town, the occupier will be considered a weekly tenant, in the absence in each case of any evidence to the contrary. But if it appears that the property was held at an annual rent then he will be held to be a tenant from year to year.

Tenancy from year to year.

For the latter kind of tenancy can not only be created by express contract, but it will be held to exist whenever the occupier has entered without any stipulation being made as to time, but on a verbal understanding that he is to pay a yearly rent, or where, although this understanding does not exist, he does in fact pay a rent which the court can presume to be yearly from the fact of its being paid quarterly or half-yearly. Such a tenancy can only be determined by either party on his giving *one year's* notice to the other of a desire to determine it at the end of *some year of the tenancy.** If, for instance, the tenant entered at Michaelmas he can be compelled, by such notice, to give up possession the next or any following Michaelmas, but he cannot be compelled to leave at any other time than Michaelmas. With regard to the length of notice necessary, it seems that although half a year's notice may be arranged between the parties, a year's notice is otherwise necessary.† So that if a tenant is under the provisions of the Agricultural Holdings Act, 1883, and enters at Michaelmas, 1900, and no notice is given by the following Michaelmas day, he must have at least three years' possession, that is, till Michaelmas, 1903; for a notice given after Michaelmas, 1901, would not have a clear year to run before Michaelmas, 1902. The Act will apply unless some provision is made by the parties to the contrary according to

Notice to quit.

---

* One year's notice is applicable only to holdings which come under the provisions of the Agricultural Holdings (England) Act (46 & 47 Vict.), s. 33. This section does not in respect of other holdings affect the common law rule that in yearly tenancies the tenant is entitled to half a year's notice to quit, expiring at that period of the year when the tenancy commenced.

† See Agricultural Holdings (England) Act, 1883 (46 & 47 Vict.), s. 33.

the terms of sect. 33 of the Act. It may be useful to observe that, although a notice is necessary to determine a tenancy from year to year, it does not follow that a person who is in for a year is such a tenant.

If either party can show that the agreement was "for a year" or "for a year certain" the tenancy will expire with the expiration of that year without any notice being given, as is always the case when any certain period is agreed upon. But this will rarely happen, as it is generally intended in the case of a yearly letting that it shall be a letting from year to year. Care should, however, be taken when any writing passes to call it a letting *from year to year;* for if it is "for a year from the day of , and *so on from year to year*" it is a tenancy for two years at the least, for to make it determinable at the end of the first year would be to give no effect to the words in italics.

Form of notice to quit.

The safest method for an agent to adopt in giving notice to a tenant from year to year is to write it (though this is not essential) and to word it thus—

To X. Y.

I hereby give you notice to quit and deliver up possession of which you hold of C. D. as tenant, on the day of next [*or* at the expiration of the year of your tenancy, which shall expire next after the end of one half year from the service of this notice].

Dated

(Signed) A. B. (*the agent*) on behalf
of the above-named C. D.

The use of the words in brackets is to save the effect of the notice where there is any doubt about the commencement of the tenancy. If there is no doubt about it they are unnecessary. If a year's notice is necessary, the word "half" will of course be omitted.

The notice must extend to the whole of the property which was comprised in the letting. And the agent must have authority to give it prior to doing so, as subsequent

Chap. VI.
Sect. 1.
Tenancy and the Mode of its Creation.

ratification by the landlord of what he has done is not sufficient.

Tenancies for longer periods.

The forms of tenancy which we have been considering are the only ones likely to be created without any writing or deed. But although no prudent person will accept or become a tenant without the terms of the tenancy being reduced into writing, the law does not require writing of any kind if the term granted does not exceed three years, and if the rent reserved amounts to two-thirds at least of the full improved value of the land. But in every case where the term is more than three years, and in every case (even in a tenancy from year to year) where the rent is less than the above amount, the effect of the Statute of Frauds,* and of a subsequent statute, is that the tenancy

In what cases a deed is necessary.

---

* Until the reign of Charles II. interests in land (including both freehold and leasehold interests) could be created or transferred, and agreements for the sale or letting of land could be made, by word of mouth, without any writing passing between the parties. But the *Statute of Frauds* passed in that reign (2 Car. 2, c. 3) required transactions of this nature to be reduced into writing; and as to *leases* a statute (8 & 9 Vict. c. 106, s. 3) declares that such of them as the former statute required to be in writing should thenceforth be made by deed only; and all conveyances and assignments which the Statute of Frauds directs to be put into writing must now be made by deed to be effectual. But the Statute of Frauds remains the foundation of the law as to the necessity for leases and agreements for selling or letting land being in writing; and it may therefore be worth while to quote its leading provisions, as some will have to be referred to again:

By sect. 1 it is enacted that "all *leases*, estates, interests of freeholds, or terms of years, or any uncertain interest of, in, to, or out of any messuages, manors, lands, tenements, or hereditaments, made or created by livery of seisin only [*i.e.*, by symbolical giving up of possession by one party and taking it by the other], or by parol, and *not put in writing and signed by the parties* so making or creating the same, or *their agents* thereunto lawfully *authorised by writing*, shall have the force and effect of leases or estates at will only; and shall not, either in law or equity, be deemed or taken to have any other or greater force or effect; any consideration for creating any such parol leases or estates notwithstanding."

But sect. 2 excepts from the operation of the above enactment "all leases not exceeding the term of three years from the making thereof, whereupon the rent reserved to the landlord during such term shall amount unto two-third parts at the least of the full improved value of the thing demised."

Sect. 3 enacts that "no leases, estates, or interests, either of freehold or term of years, or any uncertain interest not being copyhold or customary

Tenancy and the Mode of its Creation.

must be created by a written instrument, and that instrument must be a *deed* or formal document sealed by the parties.

This deed is usually called a *lease*, but in law any valid grant of a term is a lease. Thus a grant of a term of three years at a rack rent is a lease whether it be made by word of mouth, or by simple writing, or by deed.

Inasmuch as a deed is necessary for the grant of a lease when word of mouth is insufficient, it is natural to inquire the object and effect of the numerous unsealed or simple writings generally called "Memoranda of Agreement" passing between parties on the creation of a tenancy. In the first place it is clear that, in cases where word of mouth is legally sufficient, a writing is practically the only safe way of preserving evidence of the terms of the tenancy; and according to the definition just given such a writing may properly be called a lease.

---

interest, of, in, to, or out of any messuages, manors, lands, &c., shall at any time be assigned, granted, or surrendered, unless it be by *deed* or *note in writing, signed by the party* so assigning, granting, or surrendering the same, *or their agents* thereunto lawfully *authorised by writing*, or by act or operation of law."

Sect. 4 enacts, amongst other things, that "no action shall be brought whereby to charge any person upon *contract* or *sale* of lands, tenements, or hereditaments, or any interest in or concerning them, unless the agreement upon which such action shall be brought, or some memorandum or note thereof be in *writing*, and *signed by the party to be charged therewith, or some other person thereunto by him lawfully authorised.*"

And by sect. 17 it is enacted that no contract for the sale of any *goods* for the *price of 10l. sterling or upwards* shall be allowed to be good except the buyer shall, first, *accept part of the goods* so sold and actually receive the same; or, secondly, shall give something in earnest to bind the bargain, or in part payment; or, thirdly, unless some *memorandum or note in writing* of the said bargain be made, and *signed by the parties* to be charged with such contract, *or their agents* thereunto *lawfully authorised.*

It is to be observed that, although by sect. 2 certain leases may still be made without writing, the effect of sect. 4 is that when the intention of the parties is not to make a present lease, but to agree that one shall be made at a future date, the agreement must be in writing, as a contract for an interest in land. Thus a present lease from year to year at a rack rent may be made by word of mouth (by sect 2); but an agreement to grant at a future time a lease from year to year at a rack rent must be in writing (by sect. 4).

CHAP. VI. Sect. 1. *Tenancy and the Mode of its Creation.*

Unsealed writings or memoranda may be— (*a*) leases, (*b*) agreement to grant or accept leases.

But, secondly, when the lease is one which cannot be granted without a deed, a writing may prove that the parties had agreed that one should be granted or accepted; and in cases of this nature the courts, holding that what the parties had agreed to do ought to be done, will come to their assistance. For it will compel either of them to carry out or "specifically perform" an agreement of which there exists a memorandum or note in writing signed by him or some other person thereunto by him lawfully authorised: (see sect. 4 of the Statute of Frauds, set out on the preceding page.) Nothing, indeed, is commoner than for an agreement of this kind so fully to embody the terms of the letting that the tenant takes and holds on the mere right which he thus has to compel his landlord to execute a lease framed on those terms. But the plan of allowing such an agreement to take the place of a lease is not to be encouraged. The Legislature, aware that it would offer an easy means for avoiding the stamp duties imposed upon leases, has made such agreement subject to the same duty as would be the lease itself, and remits the duty on a lease executed in pursuance of it.

Popular phraseology calls the arrangement a lease, if it is contained in a deed; an agreement, if it is a mere memorandum. The true distinction is that it is a lease where it actually grants an interest, and an agreement when it only agrees that one shall be granted at a future time. Thus so-called "Memoranda of Agreement" (as example B., *ante* page 14), where they relate to tenancies at a rack rent for three years or under (being tenancies which can be created orally), are generally leases; for no special form of words is needful for the grant of a lease. The usual words are "doth demise, lease, and to farm let;" but if they be that "A. agrees to let and B. agrees to take," the effect of such a memorandum will be precisely the same, and an immediate interest will pass; and, on the other hand, just as a paper styled upon its back "a memorandum of agreement" may be, in fact, a lease, so may a document styling itself a lease be nothing more in law than an agreement; for if the term be one which can only be granted by deed, and the document is an unsealed writing (in other words a memorandum of agreement), the courts, instead of holding it to be merely a void lease, may construe it as an agreement to grant a lease, and may order specific performance accordingly.

Stamps.

The stamp duties upon leases are as follows:

If the rent, whether reserved as a yearly rent or otherwise, is at a rate or average rate—

	If the term is definite, and does not exceed 35 years, or is indefinite.			If the term being indefinite exceeds 35 years, but does not exceed 100 years.			If the term being definite, exceeds 100 years.		
	£	s.	d.	£	s.	d.	£	s.	d.
Not exceeding £5 per annum ...	0	0	6	0	3	0	0	6	0
Exceeding £5 and not exceeding £10	0	1	0	0	6	0	0	12	0
„ 10 „ 15	0	1	6	0	9	0	0	18	0
„ 15 „ 20	0	2	0	0	12	0	1	4	0
„ 20 „ 25	0	2	6	0	15	0	1	10	0
„ 25 „ 50	0	5	0	1	10	0	3	0	0
„ 50 „ 75	0	7	6	2	5	0	4	10	0
„ 75 „ 100	0	10	0	3	0	0	6	0	0
„ 100, for every full sum of £50, and also for any fractional part of £50 thereof	0	5	0	1	10	0	3	0	0

Of any other kind whatsoever not hereinbefore described ... 0 10 0

Duplicate or Counterpart of any instrument chargeable with any duty:—

Where such duty does not amount to 5*s*. ... ... { The same duty as the original instrument.

In any other case 0 5 0

Costs of the lease.

In the absence of any agreement to the contrary, it seems that the lessee is bound to pay the costs incurred in the preparation of the lease, but that the expense of the counterpart falls upon the lessor. This is a useful rule to recollect when, as frequently happens, the lessor's solicitor acts for both parties. If the lessor means to pay none of the costs, he should make a stipulation to that effect. When the lessee intends to employ a separate solicitor to

Chap. VI. Sect. 1. *Tenancy and the Mode of its Creation.*

act for him, and settle and approve the lease on his behalf, it is always desirable for the lessor, whose solicitor should prepare and engross the lease, to have an express agreement about the payment of his (the lessor's) solicitor's bill, unless he intends to bear the costs of it himself; as he will, of course, be the person liable to his solicitor.

SECTION II.

Rights incident to Tenancy by Law and Contract.

Assuming now that the tenancy has been created at a certain rent payable at some fixed periods, and that nothing beyond this has been agreed upon by the parties (as may often happen in the case of a tenancy created orally), the law confers upon each of them certain rights and liabilities as the result of the relation into which they have entered. Something must be known of these in order to apprehend the bearing of the stipulations which, whenever the letting is effected by a written document, are usually entered into between them in order to modify their legal position. Some of the stipulations expressed in such a document can indeed scarcely be said to have this object, for they do in effect merely confirm, by express agreement, what would be the legal obligations of the parties without them. But as a whole their effect is to modify these obligations. When the stipulations are contained in a deed they are called *covenants*. We shall contrast the right conferred by such stipulations, whether contained in a deed or memorandum, by calling them the rights given by *contract*, as distinguished from the rights given by law.

Payment of rent.

In the first place the law gives to landlords a remedy for the recovery of rent in arrear, which is not available for debts generally. And this remedy they do not lose even if they take a bill of exchange or note of hand for the rent, for such a course does not constitute any alteration of the debt until payment. The right of *distress,* to which we allude, entitles the landlord, without taking any legal proceedings, to seize upon the goods found upon the premises in order to enforce payment. The right extends in theory to everything which can be moved from the premises and brought back without injury. This principle excludes the seizure of fixtures, and also of articles that would at once perish, such as milk or fruit; but it does not exclude crops, although they are not yet cut. These are, however, exceptions to the general principle. Beasts of the plough and sheep are not distrainable if there is, without them, sufficient distress on the premises other than growing corn, although it appears that other kinds of cattle are*; and all the instruments of husbandry or of a man's trade are similarly privileged. But articles in actual use, such as a machine at work, or a horse on which a man is riding, can in no case be seized.

Distress.

What goods are distrainable.

Distress may be made either during the currency of the term or six months after its duration if the tenant is remaining in possession. The proper mode of affecting a distress is for the landlord to employ a bailiff, authorised to act as such by a County Court judge, who must then, at some time in the day between sunrise and sunset, enter upon the premises and expressly declare that he distrains either certain articles or part in the name of the whole; but he must not break open the outer door of the house or force the gates or doors of out-buildings.

Mode of effecting a distress.

The next step is to *impound* the goods, which may be done by removing them to the pound, or, if they are left upon the premises, either by shutting them up together there, or by obtaining the tenant's written consent to their being considered as impounded where they stand. Indeed, a statement in the notice of distress that they are impounded in the premises in such a place would seem to be sufficient. But if they are left on the premises, the safety of the landlord requires that a person be left in possession on his behalf.

---

* Act 51 Henry III. s. 4.

An inventory of the goods seized must be taken, and a copy of this, together with a written notice that the goods named have been distrained, must be served upon the tenant, by being put into his hands or left at his house. The notice shall also state the amount of the arrears for which the distress is made, and the date when it became due, and that unless the amount and costs be paid within five days the goods will be sold according to law.*

If no tender be made within the five days within which the law allows the tenant to replevy (or recover) his goods, the landlord may then proceed to sell them at the best price that can be got. The surplus (if any) of the sale moneys is to be left in the hands of the sheriff, under-sheriff, or constable.

Other remedies to enforce payment of rent.

Distress is, therefore, the landlord's most efficacious remedy by reason of the priority which it gives him over other creditors; and some understanding of the process is useful, because there may be occasions in which it is necessary to commence proceedings before recourse can be had to legal advice. But the law gives the landlord other remedies; for he may bring an action of debt for rent, or, if the demise be not by deed, an action for use and occupation. And the position of the landlord is still further strengthened by the contract contained in every properly drawn lease.

Covenant to pay.

For, firstly, the lessee is always made to *covenant* expressly for the payment of rent, a plan which makes him personally responsible for the payment throughout the whole term, even though he assign the lease to another.

---

* The period of five days provided in the Act of William and Mary within which the tenant may replevy the same, shall, in the case of any distress on a holding to which the Agricultural Holdings (England) Act, 1883, applies, be extended to a period of not more than fifteen days if the tenant make a request in writing in that behalf to the landlord.

Proviso for re-entry or forfeiture clause.

And, secondly, the lease almost always empowers the landlord to *re-enter for non-payment of rent or breach of any covenant or stipulation,* and to take possession again as though no lease had been made. But this liability imposed upon the tenant of forfeiting his lease if he tenders his rent a day late, or forgets to pay an insurance premium in accordance with the agreement, has been considered by the courts an unfair burden upon him. Therefore, so far as regards the payment of rent, the courts consider the proviso as intended as a security only, and annul the forfeiture on the tenant's paying all arrears and costs incurred. The courts have now also power to grant similar relief in the case of a breach of a covenant to insure, provided no damage by fire has happened. As to the breach of other covenants, such as the contract to repair, similar relief can be obtained, and the landlord may not re-enter, if the terms of the covenant have been broken, until the tenant has had an opportunity of remedying the breach and paying compensation for the same. Conveyancing and Law of Property Act, 1881.

Relief against forfeiture.

Waiver of forfeiture.

It is also to be observed with regard to forfeiture, that a landlord intending to avail himself of it must be cautious in accepting rent after he has notice of the breach upon which he proposes to rely. For acceptance after notice is an implied waiver of the forfeiture. If, however, the breach is of a continuing kind, as allowing premises to remain out of repair, the waiver does not extend to the breach continuing after the acceptance.

It may be useful briefly to summarise the position of the parties with reference to rates and taxes, although something has been said in the text on the practical bearing of the question.

Rates, taxes, and assessments.

Property tax is a tenant's tax as between him and the public; but he is entitled, after actual payment, to deduct the amount from his next payment of rent (or from subsequent rent accruing due during the current year of the tenancy, or other period during which the tax was accruing

CHAP. VI. Sect. 2. *Rights incident to Tenancy by Law and Contract.*

due), and of this right he cannot deprive himself by contract, it being intended by the Legislature that the tax should fall upon the landlord's income.

Land tax is also a tenant's tax as between him and the public, though it is intended that the landlord should ultimately bear so much of it as equals his interest in the land. The tenant is therefore entitled to deduct from his rent such a proportion of the amount which he has paid, as the rent bears to the assessed annual value of the premises, so that if the rental is as high as, or exceeds the assessment, he is entitled to deduct the whole. But of this right the tenant can deprive himself by contract; even an agreement to pay rent "free of all outgoings" will be regarded as an agreement by him to pay the land tax.*

Sewers rates are also collected from the tenant, but, in the absence of any agreement to the contrary, they are intended to fall upon the landlord, and the tenant is entitled to deduct the amount of his payment from the rent.

The above appear to be the only three dues which are intended to take effect out of the landlord's interest.

House tax falls, like all the assessed taxes, upon the person using and enjoying the article taxed, who is in this case the tenant. He has no right to deduct it from his rent unless the landlord has agreed to pay it.

Poor rate is a personal charge upon the occupier or tenant, in respect of his possession—not upon the owner in respect of his ownership. But under some modern Acts of Parliament the owner of any small tenement may, in certain cases, be rated instead of the occupier.*

---

* The Finance Act, 1896 (59 & 60 Vict. c. 28, s. 31), limits the amount of the land tax, as follows:—

"The amount assessed in any year in any land tax parish on account of the unredeemed quota of land tax charged against that parish shall not after the passing of this Act exceed the amount which would be produced by a rate of one shilling in the pound on the annual value of the land in the parish subject to land tax,' and any excess above the said amount shall be remitted for that year."

CHAP. VI. Sect. 2. *Rights incident to Tenancy by Law and Contract.*

County rates and highway rates are as between landlord and tenant in a similar position to the poor rate, and all three of these rates are collected by the same machinery (referred to in the text, *ante*, p. 30). But the highway rates under the Highway Acts, which are made by the surveyor of highways and collected after they have been certified by two justices of the peace, are to be distinguished from such rates for the purposes of highways as may be included in the

District rates.—These are made by local boards of health for any purposes within their district (including the maintenance of highways), for which they are authorised to raise money by the statutes which regulate their proceedings. District rates are likewise charged on the occupier, who, in the absence of agreement, has no right to recoup himself by deduction from his rent, except in certain cases provided for in the Acts, as in the case of improvement rates.

In the preparation of an agricultural lease, the most desirable form of stipulation on this subject is that the tenant shall pay "all taxes, rates, assessments, impositions, and outgoings whatsoever, whether parochial, parliamentary, or otherwise, which now are, or shall at any time during the said term be taxed, assessed, or imposed upon the demised premises or upon the landlord or tenant in respect thereof, except property tax and——," any tax or rate, *e.g.*, land tax or sewers rate, which it is intended the landlord shall pay. By imposing the whole liability in general terms upon the tenant who is usually intended to bear it, and thus excepting anything that he is not intended to bear, the position of the parties is put before them in a way that neither of them can easily misunderstand.

---

* The Agricultural Rates Act, 1896 (59 & 60 Vict. c. 16), exempts agricultural land from half of the rates. Section I. enacts as follows:—

"During the continuance of this Act, that is to say, the period of five years after the thirty-first day of March next after the passing of this Act, the occupier of agricultural land in England shall be liable in the case of every rate to which this Act applies, to pay one-half of the rate in the pound payable in respect of buildings and other hereditaments."

It may be noticed here that by an Act of 1900, the same exemption of half-rates applies to tithe rentcharge so far as it is held by clerical owners; and further, that the exemption applies only to agricultural land and not to buildings.

Repairs. Landlord's liability.

In the absence of contract, the fact of tenancy does not place the landlord under any liability in respect of repairs; for the law will not imply any promise on his part either to repair the premises, or that they are reasonably fit for habitation or cultivation, or other the purposes for which they are let. If they are burned down, the landlord need not rebuild them. The tenant cannot, unless in certain cases provided for by a statute (14 Geo. 8, c. 78), even compel him to expend money which he has received from an insurance office in rebuilding, but must go on paying his rent during the rest of the term, though his house and farm buildings be gone. And it makes no difference that the landlord had covenanted for quiet enjoyment, for this covenant only relates to the landlord's title.

Tenant's liability.

On the other hand the law places every tenant under some obligation in this particular. A *tenant from year to year* is not bound to do substantial and lasting, or general repairs, such as new roofing when a roof is worn out. Nor is he liable to make good ordinary wear and tear. But he is said to be liable for fair tenantable repairs. This means that he must do such small acts as may at any time be necessary to keep the property from wasting and deteriorating, for it would be negligence if it were injured through the disregard of ordinary precautions to keep it wind and water tight, as, for instance, for want of mending a broken window or door, or replacing a slate upon the roof; and for such negligence he is liable, it being a breach of the duty which the law imposes upon him to use the premises in a tenant-like manner. A *tenant for years*, on the other hand, is bound to execute all necessary general repairs, but this general legal liability is in almost every case rendered unimportant by the express contract to repair, contained in a lease for years.

Covenants to repair.

For the tenant should always, in agricultural leases, expressly covenant to keep the premises in repair. In a lease from year to year the covenant is usually qualified so as to make the tenant's liability in a great measure similar to that which would, without the covenant, be imposed by law. The terms of the covenant, or agreement, for instance, may be "to keep the farmhouse, buildings, cottages, and premises, with their respective fixtures and appurtenances, except external walls and roofs, and all gates, gateposts, stiles, rails, and dead fences, in good and tenantable repair and condition (ordinary wear and tear, and damage by extraordinary storm or tempest excepted)." But in a lease for a term of years it is not usual so to qualify the covenant, but to impose a general liability to repair. The tenant is sufficiently protected by the construction which the courts put on such a covenant; for a jury, in deciding whether or not the covenant has been broken, are to regard the general condition of the property at the time he entered; for in the case of an old house he is not bound to give it up in an improved condition, or to avert the natural process of decay, but only to preserve the property in so far as this may be done by a timely expenditure of care and money. In leases of farmhouses and buildings for terms of years, therefore, there seems no reason why the covenant required from the tenant should be in any way limited. He should satisfy himself that the property is in good and tenantable repair before he enters; and there is no hardship in requiring him to keep and deliver it up in this condition, in so far as it is reasonably possible by careful labour and expense, which is all the law appears to regard the covenant as implying. Words excepting "ordinary wear and tear," when a long term of years is in question, may only result in complicating and

Chap. VI. Sect. 2. *Rights incident to Tenancy by Law and Contract.*

confusing an issue already sufficiently difficult. To simplify it, and make the tenant's obligation more definite and explicit, should always be the object of the landlord or his agent. It is for this purpose that we often find in the general covenant to repair an enumeration of particular objects—*e.g.*, walls, fences, gates, rails, stiles, drains, hedges, weather-boarding, racks, mangers, doors, windows, pumps, thatch, slates, tiles, which, although they may be included in the general terms, it is thought useful to call the tenant's attention to. But this must be done in such phraseology as to make it clear that the enumeration is not intended to be a complete list of the things to which the tenant's liability is to extend—a difficulty always to be borne in mind when general language is followed by particular description. The general covenant should also be followed by special covenants to paint outside and inside, and to tar, limewash, and the like at fixed periods during the term.

It is common in leases such as we are referring to, for the landlord to provide the necessary material, and when he agrees to do so there is no objection to making the tenant's liability conditional on the landlord's performing his part of the agreement.

Damage by fire and tempest.

Under a general covenant by a tenant to repair, or, still more obviously, under a covenant to repair, maintain, and uphold (which terms are preferable as being more explicit), he will have to rebuild in case the premises are burned down or blown down. The tenant, therefore, usually and fairly claims to have damage by fire and tempest excepted from the operation of his covenant, although as to tempest a pecuniary limit is sometimes fixed for damage. To that amount he is liable, but not beyond it; for instance, it is declared that he shall not be liable to make good damage by fire, or damage by tempest exceeding 40*s*. It is also important for the tenant to obtain from the landlord a covenant to rebuild and make good in these excepted cases, because, as has been already stated, the latter is under no legal liability to do so. Some landlords, in addition to entering into such a covenant, allow a clause to be inserted providing that the rent shall not be payable, or shall be reduced, so long as the destruction continues. Tenants, however, frequently sign leases whereby they undertake absolutely to pay rent for buildings for a long term of years, although no one is bound to rebuild them in case they are burnt down.

Insurance.

When the lease contains no stipulation about insurance, it is because the landlord intends to insure himself, and as the tenant has no guarantee that he will do so, it is in these cases that the tenant might find himself in the unfortunate position just alluded to. But where it is agreed that the tenant shall insure, he has less reason to concern himself about the possible destruction of the premises, as he has some security for their being rebuilt. The usual form of a covenant by a tenant to insure, is to insure the premises in a specified office for not less than a fixed amount, either in the name of the lessor or in the joint names of the lessee and lessor, and to keep the same insured during the term, and to produce the policy and the receipt for the premium for the current year when required to do so by the lessor or his agent.

Assignment and under-letting.

In leases of farms it is usual for the lessor to desire that no one but the person whom he accepts as a tenant shall occupy that position; and as the law entitles the tenant in the absence of any agreement to the contrary to assign or underlet his interest in the premises to another, such an agreement is often made. The wording of the covenant must be carefully looked to; a covenant "not to assign, transfer, or set-over, or otherwise put away the lease or the premises hereby demised, or any part thereof," was held not to be broken by an under-lease; therefore under-letting as well as assigning must be provided against. A covenant against assignment does not appear to be broken by a bequest of the premises (but this is doubtful) or by the plaintiff's depositing the lease with a banker as a security for a loan if no actual assignment by way of mortgage be made.

The operation of the bankruptcy laws upon such a covenant involves points which can be scarcely considered here; but as a general rule it is better when the lessor wishes to be protected against the assignment, which would be consequent on bankruptcy, that he should reserve *power to re-enter* in the case of the tenant becoming a bankrupt, or a liquidating or compounding debtor, as well as in case of breach of covenant,—as such a power of re-entry will enable him to avoid any contention with the trustee in bankruptcy or liquidation as to what is or is not an "assignment" within the meaning of the covenant.

Cultivation.

The tenancy of a farm imposes an obligation on the tenant to farm the land in a husbandlike manner, according to the custom of the country where the same is situate. Therefore, in this, as in many other cases, the insertion of an express covenant by him to do so is only useful for the reason that an express covenant is legally more satisfactory than an implied one. But whether the covenant is express or only implied, it may be said that in the present state of agriculture it is not desirable to rely upon it as binding the tenant to anything except the avoidance of acts of manifestly bad farming. If it is desired to compel him to follow some exact course of cultivation it will certainly be safer not to rely upon the custom of the country, but to express in exact terms what is expected of him.

Consumption of hay, straw, and manure.

The last observation applies also to the tenant's duty in respect to straw, hay, and manure. Good husbandry requires that the dung and manure produced upon the farm be used upon the premises and not taken away or sold; so that it would be a breach of the express or implied covenant to observe the law of good husbandry if the tenant were to remove or sell any of these things during the term or at its expiration, unless the act were justified by some special custom in the country where the farm is situate.

The right at law (in the absence of custom regulating the matter) to remove hay and straw seems to be doubtful. But in a matter of such importance it is clearly best to have the understanding of the parties expressed in the lease, especially as it is now generally desirable for the tenant to have some limited right of selling his hay and straw.

Waste in respect of minerals.

Allusion has been made in a previous chapter to *waste* as between a tenant for life and the owner of the fee or inheritance. But waste is a matter of equal importance as between landlord and tenant, and the rules with regard to it are almost precisely the same. For the law forbids a tenant for years to do any act which will result in a permanent spoiling of the property, whether it be by positive act (in which case it is *voluntary waste*) or by negligence and omission (when it is *permissive waste*). Such acts are a breach of the covenant, which is always implied when it is not expressed, to use the premises in a tenant-like manner. Thus it is waste for the tenant to open either mines or pits for gravel, clay, &c., not open at the time of his entry, except in so far as it may be necessary to dig for such materials as chalk and clay for the purposes of application on the holding. But as to pits or mines already open, it is said that he is at liberty to work them, for they constitute a visible part of the annual profit of the holding.

It is to be observed, however, that *waste* can only happen with reference to the thing actually demised. Therefore, where, as is frequently the case, the mines and minerals are excepted out of the demise, the abstraction of them would not be waste (except in so far as the surface might be injured) but an offence of a different nature.

In respect of trees and underwood.

So with regard to timber; the landlord's interest generally requires that all trees and underwood shall be excepted from the demise, and that the tenant shall expressly covenant not to injure them. But if the lease contains no such exception the law against waste will prevent the tenant from cutting down or destroying timber

Rights incident to Tenancy by Law and Contract.

trees or anything that would become timber; but it will not prevent him from cutting hazels, or any bushes or underwood which would never become timber—for bushes are the property of the tenant in the absence of exception or agreement to the contrary. Moreover, a tenant bound to repair and find material will not commit waste even by cutting such timber trees as are necessary for the purpose of the repairs. For every tenant has a right to wood for fuel to burn in the house, for the making and repairing all instruments of husbandry, and for repairing the house and the hedges and fences. But this right will of course be defeated by an exception of the nature above referred to.

In respect of pasture or other land.

Another form of waste is by ploughing up meadow or pasture land. This offence is usually provided against by reserving an additional penal rent of so much for every acre in respect of which it is committed. It has been said, in the old books, that changing the course of husbandry is waste; but this principle can only be applicable where the soil is applied to some purpose which will for some time materially affect or prevent the possibility of its use for ordinary agriculture.

In respect of fences.

In all the above cases the tenant breaking the law will be guilty of voluntary waste. An obvious instance of permissive waste will be neglect to repair and maintain, in so far as a liability to do so is imposed on the tenant by law, and not by contract—breach of express covenant being an offence of a different nature to that now under consideration. The neglect to maintain fences, whether live or dead, is permissive waste, for such maintenance is clearly a part of the general duty of a tenant for years, although the landlord may by the custom of the country be bound to find material. A tenant from year to year is not liable (except to the extent which was indicated in speaking of repairs) for permissive waste, and is therefore not under the same obligation to maintain fences. But fences are usually either the subject of express covenant, or if not expressly named are covered by a general covenant to repair.

Property in fences.

Whilst alluding to the subject of fences—including in that term all artificial boundary lines—it may be well to point out the legal position with respect to ditches constituting the external boundary line of the demised property. Where there is a ditch and a bank planted with a hedge, the ditch, in the absence of evidence to the contrary, is a part of the property on which the hedge is situate, and it is therefore the duty of the tenant in occupation of that property to clean and maintain it. That this is so will be clear if we consider that a man making a ditch must make it on his own property. But in doing so he will cut to the very extremity of his own land; and he must therefore throw the soil dug out not upon his neighbour's side of the ditch, but upon his own, for he has no right to pile the soil upon his neighbour's land. When, on the other hand, the boundary line is not of this double nature, but consists of a hedge or ditch, or a wall only, the adjoining owners are to be considered owners in common of the barrier and the soil on which it is situate, unless such ownership is disproved by facts as to origin or user indicating that the proprietorship is of a different kind.

Game.

The relative rights of landlord and tenant in respect of game upon the land let will be found discussed in a separate chapter.*

Fixtures.

Considering the difficulty which attaches to the subject of *fixtures*, it is to be wondered that differences between landlord and tenant on the subject are not more frequent than they are. The fundamental principle of the law, which it is necessary that the landlord's agent should bear in mind, is, that any article affixed to the soil or to the fabric becomes part of the freehold, and consequently the property of the freeholder. The result of this principle is that what has once been so affixed by the tenant cannot be removed by him either during the lease or after its termination. Articles so affixed to the freehold should, according to this rule, all be called "*landlord's fixtures,*" as belonging to the landlord. But there are important exceptions to the generality of the rule about removal, and articles coming within these exceptions are generally called "*tenant's fixtures*"—a term meaning that, although the articles are parts of the freehold or fabric, the tenant has a right to remove them.

---

* *Post.*

What is a fixture.

But before considering what these exceptions are, and whether an article is a landlord's or a tenant's fixture, it must be discovered whether the article in question is properly a *fixture* at all. For it may appear to be such, it may, indeed, be an actual erection on the premises, but yet not be in any way fastened to them. If, for instance, it be a barn or a mill set up by the tenant, and merely held by its own weight upon the ground, or upon a foundation of brick or stone, and if it can be removed without injury to the freehold, it never loses its character of being a mere loose chattel, and if the tenant does not take it away during his term he may remove it afterwards. Supposing that the landlord retains it, the tenant may, indeed, recover it by just the same remedy which he would use to recover a horse left behind in the stable. And this same rule will apply to an article, even although slightly fastened to the soil or to the fabric of the house, provided that the object of the fastening is merely to assist in the more convenient use of the thing as a chattel, and that it can be removed without injury to itself or to the freehold. For instance, screwing a stocking frame to the floor to keep it steady will not make it a fixture, and many similar cases might be cited of machinery slightly attached by screws or otherwise never becoming a part of the freehold, but retaining its chattel character.

Tenant's fixtures.

Assuming, however, that the article is so annexed as to be a fixture, the question arises whether it comes within the exceptions which we have alluded to, which makes it a "tenant's fixture" as opposed to a "landlord's fixture." At an early period the inconvenience of confiscating the property of the tenant the moment it became attached to the soil or the fabric was apparent to the judges, and exceptions were made in favour of tenants putting up fixtures, either for purposes of trade, or for mere ornament and convenience to make a house habitable, such as looking-glasses, cupboards, and the like. Whilst these are affixed they are to be deemed a part of the freehold, and not as mere chattels (and consequently are not distrainable for rent), but they are nevertheless severable by the tenant, and can be removed by him *during his term.* But if he allows them to remain fixtures till the term has come to an end, his right of removal is gone. He cannot claim to enter and sever them afterwards. Moreover, in ascertaining how far a tenant in any particular case has the right of removal, it is often necessary to refer to the words of the covenant to yield up the premises at the end of the term, for that covenant often provides for the delivery up of things which, but for it, the tenant might claim to remove as tenant's fixtures.

Agricultural fixtures.

But the curious feature of the question is, that, although an exception of this kind was made in favour of traders, the exception was not extended to agricultural tenants. The latter, even to the present day, cannot claim the benefit of a similar privilege to sever and remove fixtures. The Legislature has endeavoured to protect them by two Acts of Parliament; but with what slight result will be seen by considering the statutes in question.

Statute 14 & 15 Vict. c. 25, s. 3.

By the statute 14 & 15 Vict. c. 25, s. 3, it is enacted as follows: "If any tenant of a farm or land shall, after the passing of this Act, *with the consent in writing of the landlord* for the time being, at his own cost and expense, erect any farm buildings, either detached or otherwise, or put up any other building, engine, or machinery, either for agricultural purposes or for the purposes of trade and agriculture (which shall not have been erected or put up in pursuance of some obligation in that behalf), then all such buildings, engines, and machinery shall be the property of

CHAP. VI. Sect. 2. *Rights incident to Tenancy by Law and Contract.*

the tenant, and shall be removable by him, notwithstanding the same may consist of separate buildings, or that the same or any part thereof may be built in or permanently fixed to the soil; so as the tenant, making any such removal, do not in anywise injure the land or buildings belonging to the landlord, or otherwise do put the same in like plight and condition, or as good plight and condition, as the same were in before the erection of anything so removed; provided, nevertheless, that no tenant shall, under the provision last aforesaid, be entitled to remove any such matter or thing as aforesaid without first giving to the landlord or his agent one month's previous notice in writing of his intention so to do; and thereupon it shall be lawful for the landlord, or his agent on his authority, to elect to purchase the matters and things so proposed to be removed, or any of them, and the right to remove the same shall thereby cease, and the same shall belong to the landlord; and the value thereof shall be ascertained and determined by two referees, one to be chosen by each party, or by an umpire to be named by such referees, and shall be paid or allowed in account by the landlord, who shall have so elected to purchase the same."

Agricultural Holdings Act, 1883, sect. 34.

The privilege here given to tenants depends upon their having obtained their landlord's written consent to the erection of the fixture. The 34th section of the Agricultural Holdings Act, 1883 (statute 46 & 47 Vict. c. 61), does away with the necessity for this. The 34th section is as follows:—

Fixtures.

34. Where after the commencement of this Act a tenant affixes to his holding any engine, machinery, fencing, or other fixture, or erects any building for which he is not under this Act or otherwise entitled to compensation, and which is not so affixed or erected in pursuance of some obligation in that behalf or instead of some fixture or building belonging to the landlord, then such fixture or building shall be the property of and be removable by the tenant before or within a reasonable time after the termination of the tenancy.

Provided as follows:—

1. Before the removal of any fixture or building the tenant shall pay all rent owing by him, and shall perform or satisfy all other his obligations to the landlord in respect to the holding:
2. In the removal of any fixture or building the tenant shall not do any avoidable damage to any other building or other part of the holding:
3. Immediately after the removal of any fixture or building the tenant shall make good all damage occasioned to any other building or other part of the holding by the removal:
4. The tenant shall not remove any fixture or building without giving one month's previous notice in writing to the landlord of the intention of the tenant to remove it:
5. At any time before the expiration of the notice of removal the landlord, by notice in writing given by him to the tenant, may elect to purchase any fixture or building comprised in the notice of removal, and any fixture or building thus elected to be purchased shall be left by the tenant, and shall become the property of the landlord, who shall pay the tenant the fair value thereof to an incoming tenant of the holding; and any difference as to the value shall be settled by a reference under this Act, as in the case of compensation (but without appeal).*

It will be worth while to cite here the concluding sections of this Act, as they bear as well upon the application of section 34 as upon the application of the other sections to be presently referred to.

General Provisions.

53. This Act shall come into force on the first day of January, one thousand eight hundred and eighty-four, which day is in this Act referred to as the commencement of this Act.

54. Nothing in this Act shall apply to a holding that is not either wholly agricultural or wholly pastoral, or in part agricultural and as to the residue pastoral, or in whole or in part cultivated as a market garden, or to any holding let to the tenant during his continuance in any office, appointment, or employment held under the landlord.

---

* The Agricultural Holdings Act, 1900 (63 & 64 Vict. c. 50, s. 4), enacts as follows:—

"The provisions of section thirty-four of the principal Act shall apply to a fixture or building acquired by a tenant in like manner as they apply to a fixture or building affixed or erected by a tenant."

CHAP. VI. Sect. 2. *Rights incident to Tenancy by Law and Contract.*

55. Any contract, agreement, or covenant made by a tenant, by virtue of which he is deprived of his right to claim compensation under this Act in respect of any improvement mentioned in the First Schedule hereto (except an agreement providing such compensation as is by this Act permitted to be substituted for compensation under this Act), shall, so far as it deprives him of such right, be void both at law and in equity.

56. When an incoming tenant has, with the consent in writing of his landlord, paid to an outgoing tenant any compensation payable under or in pursuance of this Act in respect of the whole or part of any improvement, such incoming tenant shall be entitled on quitting the holding to claim compensation in respect of such improvement or part in like manner, if at all, as the outgoing tenant would have been entitled if he had remained tenant of the holding, and quitted the holding at the time at which the incoming tenant quits the same.

57. *A tenant shall not be entitled to claim compensation by custom or otherwise than in manner authorised by this Act in respect of any improvement for which he is entitled to compensation under or in pursuance of this Act, but where he is not entitled to compensation under or in pursuance of this Act he may recover compensation under any other Act of Parliament, or any agreement or custom, in the same manner as if this Act had not passed.

58. A tenant who has remained in his holding during a change or changes of tenancy shall not thereafter on quitting his holding at the determination of the tenancy be deprived of his right to claim compensation in respect of improvements by reason only that such improvements were made during a former tenancy or tenancies, and not during the tenancy at the determination of which he is quitting.

59. Subject as in this section mentioned, a tenant shall not be entitled to compensation in respect of any improvements, other than manures as defined by this Act, begun by him, if he holds from year to year, within one year before he quits his holding, or at any time after he has given or received final notice to quit, and, if he holds as a lessee, within one year before the expiration of his lease.

A final notice to quit means a notice to quit which has not been waived or withdrawn, but has resulted in the tenant quitting his holding.

---

* Another most important alteration made by the Agricultural Holdings Act, 1900, is the repeal of this section—No. 57—of the principal Act. We have, however, allowed it to remain so that students may see the force of the repeal.

Rights incident to Tenancy by Law and Contract.

The foregoing provisions of this section shall not apply in the case of any such improvement as aforesaid—

(1.) Where a tenant from year to year has begun such improvement during the last year of his tenancy, and, in pursuance of a notice to quit thereafter given by the landlord, has quitted his holding at the expiration of that year; and

(2.) Where a tenant, whether a tenant from year to year or a lessee, previously to beginning any such improvement, has served notice on his landlord of his intention to begin the same, and the landlord has either assented or has failed for a month after the receipt of the notice to object to the making of the improvement.

60. Except as in this Act expressed, nothing in this Act shall take away, abridge, or prejudicially affect any power, right, or remedy of a landlord, tenant, or other person vested in or exerciseable by him by virtue of any other Act or law, or under any custom of the country, or otherwise, in respect of a contract of tenancy or other contract, or of any improvements, waste, emblements, tillages, away-going crops, fixtures, tax, rate, tithe rentcharge, rent, or other thing.

61. In this Act—

"Contract of tenancy" means a letting of or agreement for the letting land for a term of years, or for lives, or for lives and years, or from year to year:

A tenancy from year to year under a contract of tenancy current at the commencement of the Act shall for the purposes of this Act be deemed to continue to be a tenancy under a contract of tenancy current at the commencement of this Act until the first day on which either the landlord or tenant of such tenancy could, the one by giving notice to the other immediately after the commencement of this Act, cause such tenancy to determine, and on and after such day as aforesaid shall be deemed to be a tenancy under a contract of tenancy beginning after the commencement of this Act:

"Determination of tenancy" means the cesser of a contract of tenancy by reason of effluxion of time or from any other cause:

"Landlord" in relation to a holding means any person for the time being entitled to receive the rents and profits of any holding:

"Tenant" means the holder of land under a landlord for a term of years, or for lives, or for lives and years, or from year to year:

"Tenant" includes the executors, administrators, assigns, legatee, devisee, or next-of-kin, husband, guardian, committee of the estate or trustees in bankruptcy of a tenant, or any person deriving title from a tenant; and the right to receive com-

CHAP. VI. Sect. 2. *Rights incident to Tenancy by Law and Contract.*

pensation in respect of any improvement made by a tenant shall enure to the benefit of such executors, administrators, assigns, and other persons as aforesaid :

"Holding" means any parcel of land held by a tenant :

"County court" in relation to a holding, means the county court within the district whereof the holding or the larger part thereof is situate :

"Person" includes a body of persons and a corporation aggregate or sole :

"Live stock" includes any animal capable of being distrained :

"Manures"* means any of the improvements numbered twenty-two and twenty-three in the third part of the First Schedule hereto :

The designations of landlord and tenant shall continue to apply to the parties until the conclusion of any proceedings taken under or in pursuance of this Act in respect of compensation for improvements, or under any agreement made in pursuance of this Act.

62. On and after the commencement of this Act, the Agricultural Holdings (England) Act, 1875, and the Agricultural Holdings (England) Act, 1875, Amendment Act, 1876, shall be repealed.

Provided that such repeal shall not affect—

(*a.*) anything duly done or suffered, or any proceedings pending under or in pursuance of any enactment hereby repealed ; or

(*b.*) any right to compensation in respect of improvements to which the Agricultural Holdings (England) Act, 1875, applies, and which were executed before the commencement of this Act ; or

(*c.*) any right to compensation in respect of any improvement to which the Agricultural Holdings (England) Act, 1875, applies, although executed by a tenant after the commencement of this Act if made under a contract of tenancy current at the commencement of this Act ; or

(*d.*) any right in respect of fixtures affixed to a holding before the commencement of this Act ;

and any right reserved by this section may be enforced after the commencement of this Act in the same manner in all respects as if no such repeal had taken place.

63. This Act may be cited for all purposes as the Agricultural Holdings (England) Act, 1883.

64. This Act shall not apply to Scotland or Ireland.

---

* The definition of "Manures," forming a portion of section 61 of the principal Act, is repealed by the Act of 1900.

As it will in future be necessary to read the principal Act with the Act of 1900, we have deemed it wise to introduce the Act *in extenso* in a future section, which see *post.*

SECTION III.

TENANT RIGHT.

BY the phrase tenant right it is to be understoood here a right given by the law, independently of contract, to the tenant, entitling him after the determination of his tenancy to some continuing interest in the holding or some claim against the landlord or the succeeding tenant. It may be said that tenant right is a thing which has not been considerably developed by the English law; the instances to the contrary being of slight importance. These exceptional instances may be summarised as follows: (1) The law gives to tenants in a few rare cases the right to *emblements* (to be defined presently); (2) where a tenant can show that in the district wherein his holding was situate it is customary for the outgoing tenant to be allowed right of entry to reap crops, &c., or to be compensated by the incoming tenant in respect of particular matters, it will enforce such a custom in his favour; and (3) the Legislature recently gave the tenant certain rights by the Agricultural Holdings Acts, 1883 and 1900. The cases in which tenants holding crown or college leases have considered themselves to have a right of renewing their leases, may suggest itself as a further instance of a tenant, independently of contract, having an interest continuing after the end of his term; but these tenants have no power of compelling a renewal (in the absence of an express covenant), and some of them have already found how little their supposed tenant right was worth. They need not therefore be here considered.

Another right has lately been referred to as an instance of tenant right, namely, the right which the law gives the tenant to assign or underlet his holding in the absence of contract to the contrary. But this is a right existing *during* his tenancy, and not after its determination; for the tenancy is not put an end to by the assignment, the original tenant remaining personally liable for the performance of the covenants in the lease notwithstanding the assignment.

Rights to emblements.

It will be recollected that all growing crops or vegetation constitute at law a part of the soil until severance; and as a consequence of this principle, when the tenant's interest in the soil determines, his right in the growing crops determines with it, except in so far as the law makes some exception from this principle in his favour, by giving him what it calls *emblements.*

Emblements are those crops which are annually produced by the labour of the cultivator; and when a tenant (whether for life or years) has an estate of *uncertain duration* which determines suddenly without fault on his part, he is entitled to take the emblements, or, in other words, to reap the crops which his labour has produced. But where the tenancy of a tenant at a rack-rent comes to an end by reason of the death or cesser of the interest of a landlord whose interest was only a life interest, or some other uncertain interest, a statute (14 & 15 Vict. c. 25, s. 1) has provided that the tenant, instead of claiming emblements, shall continue to hold the land until the expiration of the current year of his tenancy, paying rent to the succeeding owner. The majority of claims to emblements, as between landlord and tenant, are covered by this Act, for the uncertainty of duration on which the claim depends must generally be an uncertainty in the landlord's interest. A determination of the tenancy resulting from the act of the tenant will never entitle him to emblements. The principle is that a tenant sowing, in the natural expectation that his tenancy will last long enough to enable him to reap, shall not lose his crop if his tenancy suddenly determines through no fault of his own.

Right to compensation according to the custom of the country.

The law of emblements, therefore, leaves the majority of tenants for years, or from year to year, whose interest is not determined through the estate of the lessor coming suddenly and unexpectedly to an end, without any rights at all. It is laid down in the books that a tenant sowing, knowing that he will have no time to reap, must suffer for his own folly—a statement which shows how little trouble has yet been taken to adapt the law to the interests of agriculture. But inasmuch as to leave an outgoing tenant in this position would be fatal to the interests of both landlords and tenants, there have grown up various customs in different districts, whereby the outgoing tenant, after his tenancy is over, either continues in occupation of a part of the farm and reaps his own crops, or receives compensation from the incoming tenant for these crops (generally called "away-going crops"), as well as for various other matters of which the incomer takes the benefit. And when the outgoer can prove the existence of such a custom, the law will enforce it in his favour. When the tenant has a lease, the question of compensation will usually be provided for by its terms; but, notwithstanding the existence of a lease, compensation may be claimed according to the custom, unless the terms of the lease are utterly inconsistent with such a claim. It is not sufficient in pleading a custom to show a uniform practice upon a particular estate, however large that estate may be; but the custom must be proved by reference to the practice of the district generally, and the witnesses must speak to facts, and not to mere matters of opinion. Where the custom entitles the outgoer to compensation for away-going crops, tillages, &c., his claim will be primarily against the incoming tenant; but there is an implied contract by the landlord himself to compensate according to the custom if there be no incoming tenant.

The matters in respect of which compensation is generally given are alluded to in the text, the most important being the away-going crops, tillages, and unconsumed straw, hay, and manure. Where instead of the tenant quitting the whole farm at once and claiming compensation, the custom entitles him to partial occupation, it is usually, but not always, upon the terms of his paying the rent and taxes for the part which he continues to occupy.

It was in this state of the law upon the subject that the Legislature passed the Agricultural Holdings Act, 1875 (38 & 39 Vict. c. 92). But, inasmuch as the 54th and 56th sections of that Act enabled the landlord and tenant to agree that it should have no operation on the tenancy; and as such persons usually did so agree, supposing of course that they understood how to transact their own business better than Parliament could teach them, the Act was chiefly interesting as evidence of the views which prevailed in 1875 on the subject with which it deals.

Rights to compensation under the Agricultural Holdings Act, 1883.

In 1883, however, another Act, entitled the Agricultural Holdings (England) Act, 1883 (46 & 47 Vict. c. 61), was passed, sect. 62 of which repealed that of 1875. This Act gives to the tenant an inalienable right to his improvements. (See sect. 55, *General Provisions, ante,* p. 378.) The clauses with regard to compensation are as follows:

Compensation for Improvements.

General right of tenant to compensation.

1. Subject as in this Act mentioned, where a tenant has made on his holding any improvement comprised in the First Schedule hereto, he shall, on and after the commencement of this Act, be entitled on quitting his holding at the determination of a tenancy to obtain from the landlord as compensation under this Act for such improvement such sum as fairly represents the value of the improvement to an incoming tenant: Provided always, that in estimating the value of any improvement in the First Schedule hereto there shall not be taken into account as part of the improvement made by the tenant what is justly due to the inherent capabilities of the soil.

As to Improvements Executed before the Commencement of Act.

Restriction as to improvements before Act.

2. Compensation under this Act shall not be payable in respect of improvements executed before the commencement of this Act, with the exceptions following, that—

(1.) Where a tenant has within ten years before the commencement of this Act made an improvement mentioned in the third part of the First Schedule hereto, and he is not entitled under any contract, or custom, or under the Agricultural Holdings (England) Act, 1875, to compensation in respect of such improvement; or

38 & 39 Vict. c. 97.

(2.) Where a tenant has executed an improvement mentioned in the first or second part of the said First Schedule within ten years previous to the commencement of this Act, and he is not entitled under any contract, or custom, or under the Agricultural Holdings (England) Act, 1875, to compensation in respect of such improvement, and the landlord within one year after the commencement of this Act declares in writing his consent to the making of such improvement, then such tenant on quitting his holding at the determination of a tenancy after the commencement of this Act may claim compensation under this Act in respect of such improvement in the same manner as if this Act had been in force at the time of the execution of such improvement.

As to Improvements Executed after the Commencement of Act.

Consent of landlord as to improvement in First Schedule, Part I.

3. Compensation under this Act shall not be payable in respect of any improvement mentioned in the first part of the First Schedule hereto, and executed after the commencement of this Act, unless the landlord, or his agent duly authorised in that behalf, has, previously to the execution of the improvement and after the passing of this Act, consented in writing to the making of such improvement, and any such consent may be given by the landlord unconditionally, or upon such terms as to compensation, or otherwise, as may be agreed upon between the landlord and the tenant, and in the event of any agreement being made between the landlord and the tenant, any compensation payable thereunder shall be deemed to be substituted for compensation under this Act.

Notice to landlord as to improvement in First Schedule, Part II.

4. Compensation under this Act shall not be payable in respect of any improvement mentioned in the second part of the First Schedule hereto, and executed after the commencement of this Act, unless the tenant has, not more than three months and not less than two months before beginning to execute such improvement, given to the landlord, or his agent duly authorised in that behalf, notice in writing of his intention so to do, and of the manner in which he proposes to do the intended work, and upon such notice being given, the landlord and

tenant may agree on the terms as to compensation or otherwise on which the improvement is to be executed, and in the event of any such agreement being made, any compensation payable thereunder shall be deemed to be substituted for compensation under this Act, or the landlord may, unless the notice of the tenant is previously withdrawn, undertake to execute the improvement himself, and may execute the same in any reasonable and proper manner which he thinks fit, and charge the tenant with a sum not exceeding five pounds per centum per annum on the outlay incurred in executing the improvement, or not exceeding such annual sum payable for a period of twenty-five years as will repay such outlay in the said period, with interest at the rate of three per centum per annum, such annual sum to be recoverable as rent. In default of any such agreement or undertaking, and also in the event of the landlord failing to comply with his undertaking within a reasonable time, the tenant may execute the improvement himself, and shall in respect thereof be entitled to compensation under this Act.

The landlord and tenant may, if they think fit, dispense with any notice under this section, and come to an agreement in a lease or otherwise between themselves in the same manner and of the same validity as if such notice had been given.

Reservation as to existing and future contracts of tenancy.

5. Where, in the case of a tenancy under a contract of tenancy current at the commencement of this Act, any agreement in writing or custom, or the Agricultural Holdings (England) Act, 1875, provides specific compensation for any improvement comprised in the First Schedule hereto, compensation in respect of such improvement, although executed after the commencement of this Act, shall be payable in pursuance of such agreement, custom, or Act of Parliament, and shall be deemed to be substituted for compensation under this Act.

Where in the case of a tenancy under a contract of tenancy beginning after the commencement of this Act, any particular agreement in writing secures to the tenant for any improvement mentioned in the third part of the First Schedule hereto, and executed after the commencement of this Act, fair and reasonable compensation, having regard to the circumstances existing at the time of making such agreement, then in such case the compensation in respect of such improvement shall be payable in pursuance of the particular agreement, and shall be deemed to be substituted for compensation under this Act.

The last preceding provision of this section relating to a particular agreement shall apply in the case of a tenancy under a contract of tenancy current at the commencement of this Act in respect of an improvement mentioned in the third part of the First Schedule hereto, specific compensation for which is not provided by any agreement in writing, or custom, or the Agricultural Holdings Act, 1875.

Regulations as to Compensation for Improvements.[*]

Regulations as to compensation for improvements.

6. In the ascertainment of the amount of the compensation under this Act payable to the tenant in respect of any improvement there shall be taken into account in reduction thereof:

(*a.*) Any benefit which the landlord has given or allowed to the tenant in consideration of the tenant executing the improvement; and

(*b.*) In the case of compensation for manures the value of the manure that would have been produced by the consumption on the holding of any hay, straw, roots, or green crops sold off or removed from the holding within the last two years of the tenancy or other less time for which the tenancy has endured, except as far as a proper return of manure to the holding has been made in respect of such produce so sold off or removed therefrom; and

(*c.*) Any sums due to the landlord in respect of rent or in respect of any waste committed or permitted by the tenant, or in respect of any breach of covenant or other agreement connected with the contract of tenancy committed by the tenant, also any taxes, rates, and tithe rentcharge due or becoming due in respect of the holding to which the tenant is liable as between him and the landlord.

There shall be taken into account in augmentation of the tenant's compensation—

(*d.*) Any sum due to the tenant for compensation in respect of a breach of covenant or other agreement connected with a contract of tenancy and committed by the landlord.

Nothing in this section shall enable a landlord to obtain under this Act compensation in respect of waste by the tenant or of breach by the tenant committed or permitted in relation to a matter of husbandry more than four years before the determination of the tenancy.

Procedure.

Notice of intended claim.

7. A tenant claiming compensation under this Act shall, two months at least before the determination of the tenancy, give notice in writing to the landlord of his intention to make such claim.

Where a tenant gives such notice, the landlord may, before the determination of the tenancy, or within fourteen days thereafter, give a counter-notice in writing to the tenant of his intention to make a claim in respect of any waste or any breach of covenant or other agreement.

---

[*] This section, and those following (6—16) are repealed by the Agricultural Holdings Act, 1900; but we think it best to leave them in this position for the convenience of students.

Every such notice and counter-notice shall state, as far as reasonably may be, the particulars and amount of the intended claim.

Compensation agreed or settled by reference.

8. The landlord and the tenant may agree on the amount and mode and time of payment of compensation to be paid under this Act.

If in any case they do not so agree the difference shall be settled by a reference.

Appointment of referee or referees and umpire.

9. Where there is a reference under this Act, a referee, or two referees and an umpire, shall be appointed as follows:—

(1.) If the parties concur, there may be a single referee appointed by them jointly:

(2.) If before award the single referee dies or becomes incapable of acting, or for seven days after notice from the parties, or either of them, requiring him to act, fails to act, the proceedings shall begin afresh, as if no referee had been appointed:

(3.) If the parties do not concur in the appointment of a single referee, each of them shall appoint a referee:

(4.) If before award one of two referees dies or becomes incapable of acting, or for seven days after notice from either party requiring him to act, fails to act, the party appointing him shall appoint another referee.

(5.) Notice of every appointment of a referee by either party shall be given to the other party:

(6.) If for fourteen days after notice by one party to the other to appoint a referee, or another referee, the other party fails to do so, then, on the application of the party giving notice, the county court shall within fourteen days appoint a competent and impartial person to be a referee:

(7.) Where two referees are appointed, then (subject to the provisions of this Act) they shall before they enter on the reference appoint an umpire:

(8.) If before award an umpire dies or becomes incapable of acting, the referees shall appoint another umpire:

(9.) If for seven days after request from either party the referees fail to appoint an umpire, or another umpire, then, on the application of either party, the county court shall within fourteen days appoint a competent and impartial person to be the umpire.

(10.) Every appointment, notice, and request under this section shall be in writing.

CHAP. VI.
Sect. 3.
Tenant Right.

10. Provided that, where two referees are appointed, an umpire may be appointed as follows:

Requisition for appointment of umpire by Land Commissioners, &c.

(1.) If either party, on appointing a referee, requires, by notice in writing to the other, that the umpire shall be appointed by the Land Commissioners for England, then the umpire, and any successor to him, shall be appointed, on the application of either party, by those commissioners.

(2.) In every other case, if either party on appointing a referee requires, by notice in writing to the other, that the umpire shall be appointed by the county court, then, unless the other party dissents by notice in writing therefrom, the umpire, and any successor to him, shall on the application of either party be so appointed, and in case of such dissent the umpire, and any successor to him, shall be appointed, on the application of either party, by the Land Commissioners for England.

Exercise of powers of county court.

11. The powers of the county court under this Act relative to the appointment of a referee or umpire shall be exercisable by the judge of the court having jurisdiction, whether he is without or within his district, and may, by consent of the parties, be exercised by the registrar of the court.

Mode of submission to reference.

12. The delivery to a referee of his appointment shall be deemed a submission to a reference by the party delivering it; and neither party shall have power to revoke a submission, or the appointment of a referee, without the consent of the other.

Power for referee, &c., to require production of documents, administer oaths, &c.

13. The referee or referees or umpire may call for the production of any sample, or voucher, or other document, or other evidence which is in the possession or power of either party, or which either party can produce, and which to the referee or referees or umpire seems necessary for determination of the matters referred, and may take the examination of the parties and witnesses on oath, and may administer oaths and take affirmations; and if any person so sworn or affirming wifully and corruptly gives false evidence he shall be guilty of perjury.

Power to proceed in absence.

14. The referee or referees or umpire may proceed in the absence of either party where the same appears to him or them expedient after notice given to the parties.

Form of award.

15. The award shall be in writing, signed by the referee or referees or umpire.

Time for award of referee or referees.

16. A single referee shall make his award ready for delivery within twenty-eight days after his appointment.

Two referees shall make their award ready for delivery within twenty-eight days after the appointment of the last appointed of them, or within such extended time (if any) as they from time to time jointly fix by writing under their hands, so that they make their award ready for delivery within a time not exceeding in the whole forty-nine days after the appointment of the last appointed of them.

Award in respect of compensation under ss. 3, 4, and 5.

17. In any case provided for by sections three, four, or five, if compensation is claimed under the Act, such compensation as under any of those sections is to be deemed to be substituted for compensation under this Act, if and so far as the same can, consistently with the terms of the agreement, if any, be ascertained by the referees or the umpire, shall be awarded in respect of any improvements thereby provided for [and the award shall, when necessary, distinguish such improvements and the amount awarded in respect thereof; and an award given under this section shall be subject to the appeal provided by this Act.]*

Reference to and award by umpire.

18. Where two referees are appointed and act, if they fail to make their award ready for delivery within the time aforesaid, then, on the expiration of that time, their authority shall cease, and thereupon the matters referred to them shall stand referred to the umpire.

The umpire shall make his award ready for delivery within twenty-eight days after notice in writing given to him by either party or referee of the reference to him, or within such extended time (if any) as the registrar of the county court from time to time appoints, on the application of the umpire or of either party, made before the expiration of the time appointed by or extended under this section.]

Award to give particulars.

19. The award shall not award a sum generally for compensation, but shall, so far as possible, specify—

(*a.*) The several improvements, acts, and things in respect whereof compensation is awarded, and the several matters and things taken into account under the provisions of this Act in reduction or angmentation of such compensation;

(*b.*) The time at which each improvement, act, or thing was executed, done, committed, or permitted;

(*c.*) The sum awarded in respect of each improvement, act, matter, and thing; and

(*d.*) Where the landlord desires to charge his estate with the amount of compensation found due to the tenant, the time at which, for the purpose of such charge, each improvement, act, or thing in respect of which compensation is awarded is to be deemed to be exhausted.

---

* The sections repealed, viz.: 6—16 have by a previous note been referred to. That portion of section 17 from "and the award shall" to the end of the section is also repealed.

Costs of reference.

20. The costs of and attending the reference, including the remuneration of the referee or referees and umpire, where the umpire has been required to act, and including other proper expenses, shall be borne and paid by the parties in such proportion as to the referee or referees or umpire appear just, regard being had to the reasonableness or unreasonableness of the claim of either party in respect of amount, or otherwise, and to all the circumstances of the case.

The award may direct the payment of the whole or any part of the costs aforesaid by the one party to the other.

The costs aforesaid shall be subject to taxation by the registrar of the county court, on the application of either party, but that taxation shall be subject to review by the judge of the county court.

Day for payment.

21. The award shall fix a day, not sooner than one month after the delivery of the award, for the payment of money awarded for compensation, costs, or otherwise.

Submission not to be removable &c.

22. A submission or award shall not be made a rule of any court, or be removable by any process into any court, and an award shall not be questioned otherwise than as provided by this Act.

Appeal to county court.*

23. Where the sum claimed for compensation exceeds one hundred pounds, either party may, within seven days after delivery of the award, appeal against it to the judge of the county court on all or any of the following grounds:

1. That the award is invalid;
2. That the award proceeds wholly or in part upon an improper application of or upon the omission properly to apply the special provisions of sections three, four, or five of this Act;
3. That compensation has been awarded for improvements, acts, or things, breaches of covenants or agreements, or for committing or permitting waste, in respect of which the party claiming was not entitled to compensation;
4. That compensation has not been awarded for improvements, acts, or things, breaches of covenants or agreements, or for committing or permitting waste, in respect of which the party claiming was entitled to compensation;

and the judge shall hear and determine the appeal, and may, in his discretion, remit the case to be reheard as to the whole or any part thereof by the referee or referees or umpire, with such directions as he may think fit.

If no appeal is so brought, the award shall be final.

The decision of the judge of the county court on appeal shall be final, save that the judge shall, at the request of either party, state a special case on a question of law for the judgment of the High Court of Justice, and the decision of the High Court on the case, and respecting costs and any other matter connected therewith, shall be final, and the judge of the county court shall act thereon.

---

* Sections 18—23, inclusive, are repealed—see *post.*

Recovery of compensation.

24.* Where any money agreed or awarded or ordered on appeal to be paid for compensation, costs, or otherwise, is to be paid within fourteen days after the time when it is agreed or awarded or ordered to be paid, it shall be recoverable, upon order made by the judge of the county court, as money ordered by a county court judge under the ordinary jurisdiction to be paid is recoverable.

Appointment of guardian.

25. Where a landlord or tenant is an infant without a guardian, or is of unsound mind, not so found by inquisition, the county court, on the application of any person interested, may appoint a guardian of the infant or person of unsound mind for the purposes of this Act, and may change the guardian if and as occasion requires.

Provisions respecting married woman.

26. Where the appointment of a person to act as the next friend of a married woman is required for the purposes of this Act, the county court may make such appointment, and may remove or change that next friend if and as occasion requires.

45 & 46 Vict. c. 75.

A woman married before the commencement of the Married Women's Property Act, 1882, entitled for her separate use to land, her title to which accrued before such commencement as aforesaid, and not restrained from anticipation, shall, for the purposes of this Act, be in respect of land as if she was unmarried.

Where any other woman married before the commencement of the Married Women's Property Act, 1882, is desirous of doing any act under this Act in respect of land, her title to which accrued before such commencement as aforesaid, her husband's concurrence shall be requisite, and she shall be examined apart from him by the county court, or by the judge of the county court for the place where she for the time being is, touching her knowledge of the nature and effect of the intended act, and it shall be ascertained that she is acting freely and voluntarily.

Costs in county court.

27. The costs of proceedings in the county court under this Act shall be in the discretion of the court.

The Lord Chancellor may from time to time prescribe a scale of costs for those proceedings, and of costs to be taxed by the registrar of the court.

Service of notice, &c.

28. Any notice, request, demand, or other instrument under this Act may be served on the person to whom it is to be given, either

---

* Section 24 is in part repealed, viz.: "or ordered on appeal" and the words "or ordered."

personally or by leaving it for him at his last known place of abode in England, or by sending it through the post in a registered letter addressed to him there; and if so sent by post it shall be deemed to have been served at the time when the letter containing it would be delivered in ordinary course; and in order to prove service by letter it shall be sufficient to prove that the letter was properly addressed and posted, and that it contained the notice, request, demand, or other instrument to be served.

Charge of Tenant's Compensation.

Power for landlord on paying compensation to obtain charge.

29.* A landlord, on paying to the tenant the amount due to him in respect of compensation under this Act, or in respect of compensation authorised by this Act to be substituted for compensation under this Act, or on expending such amount as may be necessary to execute an improvement under the second part of the First Schedule hereto, after notice given by the tenant of his intention to execute such improvement in accordance with this Act, shall be entitled to obtain from the county court a charge on the holding, or any part thereof, to the amount of the sum so paid or expended.

The court shall, on proof of the payment or expenditure, and on being satisfied of the observance in good faith by the parties of the conditions imposed by this Act, make an order charging the holding, or any part thereof, with repayment of the amount paid or expended, with such interest, and by such instalments, and with such directions for giving effect to the charge, as the court thinks fit.

But, when the landlord obtaining the charge is not absolute owner of the holding for his own benefit, no instalment or interest shall be made payable after the time when the improvement in respect whereof compensation is paid will, where an award has been made, be taken to have been exhausted according to the declaration of the award, and in any other case after the time when any such improvement will in the opinion of the court, after hearing such evidence (if any) as it thinks expedient, have become exhausted.

The instalments and interest shall be charged in favour of the landlord, his executors, administrators, and assigns.

The estate or interest of any landlord holding for an estate or interest determinable or liable to forfeiture by reason of his creating or suffering any charge thereon shall not be determined or forfeited by reason of his obtaining a charge under this Act, anything in any deed, will, or other instrument to the contrary thereof notwithstanding.

Capital money arising under the Settled Land Act, 1882, may be applied in payment of any moneys expended and costs incurred by

45 & 46 Vict. c. 38.

---

* Section 29, is repealed from "where an award has been made" to "improvement will."

a landlord under or in pursuance of this Act in or about the execution of any improvement mentioned in the first or second parts of the schedule thereto, as for an improvement authorised by the said Settled Land Act; and such money may also be applied in discharge of any charge created on a holding under or in pursuance of this Act in respect of any such improvement as aforesaid, as in discharge of an incumbrance authorised by the said Settled Land Act to be discharged out of such capital money.

Incidence of charge.

30. The sum charged by the order of a county court under this Act shall be a charge on the holding, or the part thereof charged, for the landlord's interest therein, and for all interests therein subsequent to that of the landlord; but so that the charge shall not extend beyond the interest of the landlord, his executors, administrators, and assigns, in the tenancy where the landlord is himself a tenant of the holding,

Provision in case of trustee.

31. Where the landlord is a person entitled to receive the rents and profits of any holding as trustee, or in any character otherwise than for his own benefit, the amount due from such landlord in respect of compensation under this Act, or in respect of compensation authorised by this Act to be substituted for compensation under this Act, shall be charged and recovered as follows and not otherwise.

Advance made by a company.

32. Any company now or hereafter incorporated by Parliament, and having power to advance money for the improvement of land, may take an assignment of any charge made by a county court under the provisions of this Act, upon such terms and conditions as may be agreed upon between such company and the person entitled to such charge; and such company may assign any charge so acquired by them to any person or persons whomsoever.

Resumption for Improvements, and Miscellaneous.

Resumption of possession for cottages, &c.

41. Where on a tenancy from year to year a notice to quit is given by the landlord with a view to the use of land for any of the following purposes:

The erection of farm labourers' cottages or other houses, with or without gardens;

The providing of gardens for existing farm labourers' cottages or other houses;

The allotment for labourers of land for gardens or other purposes;

The planting of trees;

The opening or working of any coal, ironstone, limestone, or other mineral, or of a stone quarry, clay, sand, or gravel pit, or the construction of any works or buildings, to be used in connection therewith;

The obtaining of brick earth, or gravel, or sand;

The making of a watercourse or reservoir;

The making of any road, railway, tramroad, siding, canal, or basin, or any wharf, pier, or other work connected therewith;

and the notice to quit so states, then it shall, by virtue of this Act, be no objection to the notice that it relates to part only of the holding.

In every such case the provisions of this Act respecting compensation shall apply as on determination of a tenancy in respect of an entire holding.

The tenant shall also be entitled to a proportionate reduction of rent in respect of the land comprised in the notice to quit, and in respect of any depreciation of the value to him of the residue of the holding, caused by the withdrawal of that land from the holding or by the use to be made thereof, and the amount of that reduction shall be ascertained by agreement or settled by a reference under this Act, as in case of compensation (but without appeal).

The tenant shall further be entitled, at any time within twenty-eight days after service of the notice to quit, to serve on the landlord a notice in writing to the effect that he (the tenant) accepts the same as a notice to quit the entire holding, to take effect at the expiration of the then current year of tenancy, and the notice to quit shall have effect accordingly.

Provision as to limited owners.

42. Subject to the provisions of this Act in relation to Crown, duchy, ecclesiastical, and charity lands, a landlord, whatever may be his estate or interest in his holding, may give any consent, make any agreement, or do or have done to him any act in relation to improvements in respect of which compensation is payable under this Act which he might give or make or do or have done to him if he were in the case of an estate of inheritance owner thereof in fee, and in the case of a leasehold possessed of the whole estate in the leasehold.

Provision in case of reservation of rent.

43. When, by an act of Parliament, deed, or other instrument, a lease of a holding is authorised to be made, provided that the best rent, or reservation in the nature of rent, is by such lease reserved, then, whenever any lease of a holding is, under such authority, made to the tenant of the same, it shall not be necessary, in estimating such rent or reservation, to take into account against the tenant the increase (if any) in the value of such holding arising from any improvements made or paid for by him on such holding.

It will be seen, by the clauses cited, that the Act of 1883 is a great advance on that of 1875. The *principle* is completely changed, and entitles the outgoing tenant to the value of his improvements *to the incoming tenant* (sect. 1) instead of a fixed proportion of his outlay as provided in the Act of 1875; therefore throwing the risk on the outgoer. Under this Act of 1875 the incoming tenant had to pay a proportionate part of the expenditure even if it had not resulted in an improvement.

It must be borne in mind, however, that this Act deals only with improvements carried out under its provisions, and not with *any* improvement which may suggest itself to the tenant. These provisions are enumerated in the First Schedule to the Act, which is as follows:—

FIRST SCHEDULE.*

PART I.

Improvements to which consent of Landlord is required.

(1.) Erection or enlargement of buildings.
(2.) Formation of silos.
(3.) Laying down of permanent pasture.
(4.) Making and planting of osier beds.
(5.) Making of water meadows or works of irrigation.
(6.) Making of gardens.
(7.) Making or improving of roads or bridges.
(8.) Making or improving of watercourses, ponds, wells, or reservoirs, or of works for the application of water power or for supply of water for agricultural or domestic purposes.
(9.) Making of fences.
(10.) Planting of hops.
(11.) Planting of orchards or fruit bushes.
(12.) Reclaiming of waste land.
(13.) Warping of land.
(14.) Embankment and sluices against floods.

PART II.

Improvement in respect of which notice to Landlord is required.

(15.) Drainage.

PART III.

Improvements to which consent of Landlord is not required.

(16.) Boning of land with undissolved bones.
(17.) Chalking of land.
(18.) Clay-burning.
(19.) Claying of land.
(20.) Lining of land.
(21.) Marling of land.

---

* This Schedule is repealed by the Act of 1900, but forms, with a few additions, the First Schedule in the said Act, which see *post.*

(22.) Application to land of purchased artificial or other purchased manure.

(23.) Consumption on the holding by cattle, sheep, or pigs of cake or other feeding stuff not produced on the holding.

Sects. 3 and 4 (which see) regulate the methods of procedure with regard to Parts I. and II., which must be complied with. Part III. requires no such regulation, as the tenant may perform the operations and claim compensation without notice, except that during the last year of his tenancy he cannot claim compensation for improvements 16—21 in Part III., without the landlord's previous consent to the execution of the work. This is reasonable, as there would be no object in carrying out expensive works without any prospect of reaping the benefit attaching.

SECTION IV.

THE AGRICULTURAL HOLDINGS ACT, 1900.

AFTER seventeen years of trial the Agricultural Holdings Act of 1883 has met with some improvement and extension, which shows that the principle there laid down has met with the approval of those directly interested in land legislation. The Act is still the "principal Act," and as such is referred to in the Amendment Act above quoted.

The changes and extensions, though important, are but brief; but it is essential that those who conduct the management of landed estates should make themselves acquainted with the new provisions. I have, therefore, deemed it wise to publish the Act *in extenso,* so that students may compare the two without difficulty.

The substance of the Act is so clear that there seems no necessity to do more than briefly epitomise the sections which bear directly upon the subject of tenant right, and

CHAP. VI. Sect. 4. *Agricultural Holdings Act,* 1900.

then to leave to the student the labour of its application to practice.

Section 1 continues to the quitting tenant the rights possessed under the principal Act, the alterations being that the First Schedule of the principal Act is repealed, and, with some additions, is now the First Schedule of the Act of 1900.

And, further, an important change is made in the repeal of section 57 of the principal Act; and by section 1, sub-section 5, of the new Act a tenant shall be entitled to claim under custom, agreement, or otherwise.

Section 2 deals with settlement of differences by arbitration, which are clear and need not be commented upon; sub-sections 2, 3, 4, 5, 6, 7, and 8 deal with notice of claim and methods of arbitration.

It will be noticed that the statutory notice of two months, under the procedure clauses of the principal Act, is repealed; and now a claim shall not be made "after the determination of the tenancy," &c., which see.

Section 3 deals with "Land Charges," and substitutes the Board of Agriculture for the county court.

Section 4 extends to fixtures *acquired* by a tenant a similar right to those affixed or erected by a tenant.

Section 5 gives to the landlord of the holding, or any person authorised by him, the right to enter to view the state of the holding at all reasonable times.

Section 6 deals with the subject of penal rents; but as it does not apply to the breaking up permanent pasture, grubbing underwoods, felling, cutting, lopping, or injuring trees, or regulating the burning of heather, it will not have a material effect in the case of ordinary agricultural leases.

The further sections should be read and studied by students; but being explanatory, and as dealing with interpretation, repeals, and so on, it is unnecessary to comment upon them.

With regard to the First Schedule, there are but few radical changes, and these consist mainly of additions, some of them long desired by tenant-right promoters; in Part I., "making or removal of permanent fences," "protecting young fruit trees," "weiring of land," and "erection of wirework in hop gardens," are the additions.

In Part III., the vexed question of horses is settled; compensation is allowed for corn grown and fed; and also for temporary pasture, lucerne, sainfoin, &c.

The Second Schedule deals with arbitration, and as there are in this some radical changes it should be studied with care by the student.

The Third Schedule contains the repealed enactments. It will be seen, after careful perusal, that the subject of tenant right has been advanced by this Act; but we leave our readers to apply these two important Acts to their practice, which they may well do, as the wording of each is clear and free from ambiguity.

AGRICULTURAL HOLDINGS ACT, 1900.

63 & 64 VICT. CAP. 50.

An Act to amend the Law relating to Agricultural Holdings.—[*8th August,* 1900.]

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

Right of tenant to compensation for improvements.

46 & 47 Vict. c. 61.

1.—(1.) Where a tenant has made on his holding any improvement comprised in the First Schedule to this Act he shall, subject as in the Agricultural Holdings (England) Act, 1883 (in this Act referred to as the principal Act), and in this Act mentioned, be entitled, at the determination of a tenancy, on quitting his holding to obtain from the landlord as compensation under the said Acts for the improvement such sum as fairly represents the value of the improvement to an incoming tenant. Provided always, that in estimating the value of any such improvement there shall not be taken into account, as part of the improvement made by the tenant, what is justly due to the inherent capabilities of the soil.

(2.) References in the principal Act to the First Schedule to that Act, shall be construed as references to the First Schedule to this Act.

(3.) In the ascertainment of the amount of the compensation payable to a tenant under the principal Act or this Act there shall be taken into account any benefit which the landlord has given or allowed to the tenant in consideration of the tenant executing the improvement.

(4.) In the ascertainment of the amount of the compensation payable to a tenant in respect of manures as defined by this Act, there shall be taken into account the value of the manure required by the contract of tenancy or by custom to be returned to the holding in respect of any crops sold off or removed from the holding within the last two years of the tenancy or other less time for which the tenancy has endured, not exceeding the value of the manure which would have been produced by the consumption on the holding of the crops so sold off or removed.

(5.) Nothing in this section shall prejudice the right of a tenant to claim any compensation to which he may be entitled under custom, agreement, or otherwise, in lieu of any compensation provided by this section.

Settlement of differences by arbitration.

2.—(1.) If a tenant claims to be entitled to compensation, whether under the principal Act or this Act, or under custom, agreement, or otherwise, in respect of any improvement comprised in the First Schedule to this Act, and if the landlord and tenant fail to agree as to the amount and time and mode of payment of such compensation, the difference shall be settled by arbitration in accordance with the provisions, if any, in that behalf in any agreement between landlord and tenant, and in default of and subject to any such provisions by arbitration under this Act in accordance with the provisions set out in the Second Schedule to this Act.

(2.) Any claim by a tenant for compensation under the principal Act or this Act in respect of any improvement comprised in the First Schedule to this Act shall not be made after the determination of the tenancy. Provided that where the claim relates to an improvement executed after the determination of the tenancy, but while the tenant lawfully remains in occupation of part of the holding, the claim may be made at any time before the tenant quits that part.

(3.) Where any claim by a tenant for compensation in respect of any improvement comprised in the First Schedule to this Act is referred to arbitration, and any sum is claimed to be due to the tenant from the landlord in respect of any breach of contract or otherwise in respect of the holding, or to the landlord from the tenant in respect of any waste wrongfully committed or permitted by the tenant, or in respect of breach of contract or otherwise in respect of the holding, the party claiming such sum may, if he thinks fit, by written notice to the other party given by registered letter or otherwise not later than seven days after the appointment of the arbitrator or arbitrators, require that the arbitration shall extend to the determination of the further claim, and thereupon the provisions of this section with respect to arbitration shall apply accordingly, and any sum awarded to be paid by a landlord or tenant shall be recoverable in manner provided by the principal Act for the recovery of compensation.

(4.) Where any claim which is referred to arbitration relates to an improvement executed or matter arising after the determination of the tenancy, but while the tenant lawfully remains in occupation of part of the holding, the arbitrator may, if he thinks fit, make a separate award in respect of such claim.

(5.) An arbitration, shall, unless the parties otherwise agree, be before a single arbitrator.

(6.) If in any arbitration under this Act the arbitrator states a case for the opinion of the county court on any question of law, the opinion of the court on any question so stated shall be final, unless within the time and in accordance with the conditions prescribed by the rules of the Supreme Court either party appeals to the Court of Appeal, from whose decision no appeal shall lie.

(7.) Any person who wilfully and corruptly gives false evidence before an arbitrator or umpire in any arbitration under this Act shall be guilty of perjury, and may be dealt with, prosecuted, and punished accordingly.

(8.) Subject to any provision contained in any agreement between landlord and tenant the Arbitration Act, 1889, shall not apply to any arbitration to which this Act applies.

52 & 53 Vict. c. 49.

Land charges.

3.—(1.) The powers of the county court under the principal Act with respect to charges shall be exercised by the Board of Agriculture, and accordingly the Board of Agriculture shall be substituted for the county court in sections twenty-nine, thirty, thirty-one, thirty-two, and thirty-nine of that Act.

(2.) Where a charge may be made under the principal Act or this Act for compensation, the person making the award shall, at the request and cost of the party entitled to obtain the charge, certify the amount to be charged and the term for which the charge may properly be made, having regard to the time at which each improvement in respect of which compensation is awarded is to be deemed to be exhausted.

(3.) Sections twenty-nine, thirty, and thirty-one of the principal Act shall apply to any money paid by or due from a landlord to a tenant as compensation for any improvement comprised in the First Schedule to this Act, whether the compensation be claimed under this Act or under custom or agreement or otherwise.

(4.) A charge made by the Board of Agriculture pursuant to this section shall be a land charge within the meaning of the Land Charges

Registration and Searches Act, 1888, and may be registered accordingly. This sub-section shall not apply to Scotland.

51 & 52 Vict. c. 51. Fixtures and buildings.

4. The provisions of section thirty-four of the principal Act shall apply to a fixture or building acquired by a tenant in like manner as they apply to a fixture or building affixed or erected by a tenant.

Power of entry.

5 The landlord of a holding or any person authorised by him may at all reasonable times enter on the holding, or any part of it, for the purpose of viewing the state of the holding.

Penal rents and liquidated damages.

6. Notwithstanding any provision in a contract of tenancy making the tenant liable to pay a higher rent or other liquidated damages in the event of any breach or nonfulfilment of a covenant or condition, a landlord shall not be entitled to recover, by distress or otherwise, any sum in consequence of any breach or nonfulfilment of any such covenant or condition in excess of the damage actually suffered by him in consequence of the breach or nonfulfilment. Provided that this section shall not apply to any covenant or condition against breaking up permanent pasture, grubbing underwoods, or felling, cutting, lopping or injuring trees, or regulating the burning of heather.

Improvements executed before Act comes into operation.

7. The compensation in respect of an improvement made before this Act comes into operation shall be such (if any) as could have been claimed if this Act had not been passed, but shall be ascertained in the manner provided by this Act.

Notice of termination of tenancy. 46 & 47 Vict. c. 62. 49 & 50 Vict. c. 50.

8. From and after the passing of this Act notice of termination of tenancy under section twenty-eight of the Agricultural Holdings (Scotland) Act, 1883, may be given in the same manner as a notice of removal under section six of the Removal Terms (Scotland) Act, 1886.

Interpretation.

9.—(1.) References to "manures" in the principal Act and this Act shall be construed as references to the improvements numbered twenty-three, twenty-four, and twenty-five in Part III. of the First Schedule to this Act.

(2.) This Act shall be construed as one with the principal Act.

Application to Scotland.

10. In the application of this Act to Scotland—

46 & 47 Vict. c. 62.

(1.) References to the principal Act and to sections twenty-nine, thirty, thirty-two, and thirty-four thereof shall be construed as references to the Agricultural Holdings (Scotland) Act, 1883, and to sections twenty-four, twenty-six, twenty-five, and thirty thereof respectively. References to sections thirty-one and thirty-nine of the principal Act shall not apply:

57 & 58 Vict. c. 13. 60 & 61 Vict. c. 29.

(2.) A reference to the Arbitration Act, 1889, shall be construed as a reference to the Arbitration (Scotland) Act, 1894, and a reference to the Market Gardeners' Compensation Act, 1895, shall be construed as a reference to the Market Gardeners', Compensation (Scotland) Act, 1897:

Chap. VI. Sect. 4. *Agricultural Holdings Act*, 1900.

(3.) The expression "either division of the Court of Session" shall be substituted for "Court of Appeal," "sheriff" for "county court" or "judge of a county court," "auditor of the sheriff court" for "registrar of the county court," "Act of Sederunt" for "Rules of the Supreme Court," "arbiter" and "arbiters" for "arbitrator" and "arbitrators" "oversman" for "umpire," "deterioration" for "waste" and "expenses" for "costs":

(4.) Any award or agreement as to compensation, and any other award under this Act, may be competently recorded for execution in the books of council and session or sheriff court books, and shall be enforceable in like manner as a recorded decree arbitral.

(5.) Where any jurisdiction committed by the principal Act or this Act to the sheriff is exercised by the sheriff-substitute there shall be no appeal to the sheriff.

Extent of Act.

11. This Act shall not extend to Ireland.

Repeal.

12. The enactments specified in the Third Schedule to this Act are hereby repealed to the extent mentioned in the third column of that schedule.

Commencement of Act.

13. This Act shall come into operation on the first day of January one thousand nine hundred and one.

Short titles.

14.—(1.) This Act may be cited as the Agricultural Holdings Act, 1900.

53 & 54 Vict. c. 57.
58 & 59 Vict. c. 27.

(2.) The Agricultural Holdings (England) Act, 1883, the Tenants Compensation Act, 1890, the Market Gardeners' Compensation Act, 1895, and this Act, may be cited together as the Agricultural Holdings (England) Acts, 1883 to 1900.

(3.) The Agricultural Holdings (Scotland) Act, 1883, the Market Gardeners' Compensation (Scotland) Act, 1897, and this Act may be cited together as the Agricultural Holdings (Scotland) Acts, 1883 to 1900.

FIRST SCHEDULE.

Sections 1, 2, 3.

Part I.

Improvements to which consent of Landlord is required.

(1.) Erection, alteration, or enlargement of buildings.
(2.) Formation of silos.
(3.) Laying down of permanent pasture.
(4.) Making and planting of osier beds.
(5.) Making of water meadows or works of irrigation.
(6.) Making of gardens.
(7.) Making or improving of roads or bridges.
(8.) Making or improving of watercourses, ponds, wells, or reservoirs, or

CHAP. VI. Sect. 4. *Agricultural Holdings Act*, 1900.

of works for the application of water power or for supply of water for agricultural or domestic purposes.

(9.) Making or removal of permanent fences.

(10.) Planting of hops.

(11.) Planting of orchards or fruit bushes.

(12.) Protecting young fruit trees.

(13.) Reclaiming of waste land.

(14.) Warping or weiring of land.

(15.) Embankments and sluices against floods.

(16.) The erection of wirework in hop gardens.

N.B.—This part is subject as to market gardens to the provisions of Part III.

PART II.

Improvements in respect of which notice to Landlord is required.

(17.) Drainage.

PART III.

Improvements in respect of which consent of or notice to Landlord is not required.

(18.) Chalking of land.

(19.) Clay-burning.

(20.) Claying of land or spreading blaes* upon land.

(21.) Liming of land.

(22.) Marling of land.

(23.) Application to land of purchased artificial or other purchased manure.

(24.) Consumption on the holding by cattle, sheep, pigs, or by horses other than those regularly employed on the holding, of corn, cake, or other feeding stuff not produced on the holding.

(25.) Consumption on the holding by cattle, sheep, or pigs, or by horses other than those regularly employed on the holding, of corn proved by satisfactory evidence to have been produced and consumed on the holding.

(26.) Laying down temporary pasture with clover, grass, lucerne, sainfoin, or other seeds, sown more than two years prior to the determination of the tenancy.

58 & 59 Vict. c. 27.

(27.) In the case of a holding as to which section three of the Market Gardeners' Compensation Act, 1895, applies—

(i.) Planting of standard or other fruit trees permanently set out;

(ii.) Planting of fruit bushes permanently set out;

(iii.) Planting of strawberry plants;

(iv.) Planting of asparagus, rhubarb, and other vegetable crops which continue productive for two or more years;

(v.) Erection or enlargement of buildings for the purpose of the trade or the business of a market gardener.

---

* Although this word occurs in the Act, it should, I think, be read—*bones.*—ED.

SECOND SCHEDULE.

RULES AS TO ARBITRATION.

Chap. VI. Sect. 4. *Agricultural Holdings Act*, 1900.

Section 2.

PART I.

ARBITRATION BEFORE A SINGLE ARBITRATOR.

Appointment of Arbitrator.

1. A person agreed upon between the parties, or in default of agreement nominated by the Board of Agriculture on the application in writing of either of the parties, shall be appointed arbitrator.

2. If a person appointed arbitrator dies, or is incapable of acting, or for seven days after notice from either party requiring him to act fails to act, a new arbitrator may be appointed as if no arbitrator had been appointed.

3. Neither party shall have power to revoke the appointment of the arbitrator without the consent of the other party.

4. Every appointment notice, revocation, and consent under this part of these rules must be in writing.

Time for Award.

5. The arbitrator shall make and sign his award within twenty-eight days of his appointment or within such longer period as the Board of Agriculture may (whether the time for making the award has expired or not) direct.

Removal of Arbitrator.

6. Where an arbitrator has misconducted himself the county court may remove him.

Evidence.

7. The parties to the arbitration, and all persons claiming through them respectively, shall, subject to any legal objection, submit to be examined by the arbitrator, on oath or affirmation, in relation to the matters in dispute, and shall, subject as aforesaid, produce before the arbitrator all samples, books, deeds, papers, accounts, writings, and documents, within their possession or power respectively which may be required or called for, and do all other things which during the proceedings the arbitrator may require.

8. The arbitrator shall have power to administer oaths, and to take the affirmation of parties and witnesses appearing, and witnesses shall, if the arbitrator thinks fit, be examined on oath or affirmation.

Statement of Case.

9. The arbitrator may at any stage of the proceedings, and shall, if so directed by the judge of a county court (which direction may be given on the application of either party), state in the form of a special case for the opinion of that court any question of law arising in the course of the arbitration.

CHAP. VI.
Sect. 4.
Agricultural Holdings Act, 1900.

Award.

10. The arbitrator shall on the application of either party specify the amount awarded in respect of any particular improvement or improvements, and the award shall fix a day not sooner than one month nor later than two months after the delivery of the award for the payment of the money awarded for compensation, costs, or otherwise, and shall be in such form as may be prescribed by the Board of Agriculture.

11. The award to be made by the arbitrator shall be final and binding on the parties and the persons claiming under them respectively.

12. The arbitrator may correct in an award any clerical mistake or error arising from any accidental slip or omission.

13. When an arbitrator has misconducted himself, or an arbitration or award has been improperly procured, the county court may set the award aside.

Costs.

14. The costs of and incidental to the arbitration and award shall be in the discretion of the arbitrator, who may direct to and by whom and in what manner these costs or any part thereof are to be paid, and the costs shall be subject to taxation by the registrar of the county court on the application of either party, but that taxation shall be subject to review by the judge of the county court.

15. The arbitrator shall, in awarding costs, take into consideration the reasonableness or unreasonableness of the claim of either party, either in respect of amount or otherwise, and any unreasonable demand for particulars or refusal to supply particulars, and generally all the circumstances of the case, and may disallow the costs of any witness whom he considers to have been called unnecessarily, and any other costs which he considers to have been incurred unnecessarily.

Forms.

16. Any forms for proceedings in arbitrations under this Act which may be prescribed by the Board of Agriculture shall, if used, be sufficient.

PART 11.

ARBITRATION BEFORE TWO ARBITRATORS OR AN UMPIRE.

Appointment of Arbitrators and Umpire.

1. If the parties agree in writing that there be not a single arbitrator, each of them shall appoint an arbitrator.

2. If before award one of two arbitrators dies or is incapable of acting, or for seven days after notice from either party requiring him to act fails to act, the party appointing him shall appoint another arbitrator.

3. Notice of every appointment of an arbitrator by either party shall be given to the other party.

4. If for fourteen days after notice by one party to the other to appoint an arbitrator, or another arbitrator, the other party fails to do so, then, on

the application of the party giving notice, the Board of Agriculture shall appoint a person to be an arbitrator.

5. Where two arbitrators are appointed, then (subject to the provisions of these rules) they shall, before they enter on the arbitration, appoint an umpire.

6. If before award an umpire dies, or is incapable of acting, or for seven days after notice from either party requiring him to act fails to act, the arbitrators may appoint another umpire.

7. If for seven days after request from either party, the arbitrators fail to appoint an umpire, or another umpire, then, on the application of either party, the Board of Agriculture shall appoint a person to be the umpire.

8. Neither party shall have power to revoke an appointment of an arbitrator without the consent of the other.

9. Every appointment, notice, request, revocation, and consent under this part of these rules shall be in writing.

Time for Award.

10. The arbitrators shall make and sign their award in writing within twenty-eight days after the appointment of the last appointed of them, or on or before any later day to which the arbitrators, by any writing signed by them, may enlarge the time for making the award, not being more than forty-nine days from the appointment of the last appointed of them.

11. If the arbitrators have allowed their time or extended time to expire without making an award, or have delivered to either party or to the umpire a notice in writing stating that they cannot agree, the umpire may forthwith enter on the arbitration in lieu of the arbitrators.

12. The umpire shall make and sign his award within one month after the original or extended time appointed for making the award of the arbitrators has expired.

13. The time for making an award may from time to time be extended by the Board of Agriculture, whether the time for making the award has expired or not.

Removal of Arbitrator, Evidence, Statement of Case, Award, Costs, Forms.

14. The provisions of Part I. of these rules as to the removal of an arbitrator, the evidence, the statement of a case, the award, costs, and forms shall apply to an arbitration in accordance with this Part as if the expression "arbitrator" whenever used in those provisions included two arbitrators or an umpire, as the case may require.

Chap. VI.
Sect. 4.
Agricultural Holdings Act, 1900.

Section 12.

THIRD SCHEDULE.

Enactments Repealed.

Session and Chapter.	Short Title.	Extent of Repeal.
46 & 47 Vict. c. 61.	The Agricultural Holdings (England) Act, 1883.	Section one. Sections six to sixteen. Section seventeen from "and the award shall" to the end of the section. Sections eighteen to twenty-three. In section twenty-four the words "or ordered on appeal" and the words "or ordered." Section twenty-nine from "where an award has been made" to "improvement will." Section fifty-seven. The definition of "manures" in section sixty-one. The First Schedule.
46 & 47 Vict. c. 62.	The Agricultural Holdings (Scotland) Act, 1883.	Section one. Sections six to eight. Sections eleven to fifteen. Section sixteen from the beginning thereof to "within the county," and from "the award shall" to the end of the section. Sections seventeen to twenty. In section twenty-one the words "or ordered on appeal," and the words "or ordered." Section twenty-four from "where an award has been made" to "improvement will." Section thirty-eight. The Schedule.
52 & 53 Vict. c. 20.	The Agricultural Holdings (Scotland) Act, 1889.	The whole Act.
58 & 59 Vict. c. 27.	The Market Gardeners' Compensation Act, 1895.	In section three the paragraphs numbered (2) and (3).
60 & 61 Vict. c. 22.	The Market Gardeners' Compensation (Scotland) Act, 1897.	In section three the paragraphs numbered (2) and (3).

CHAPTER VII.

GAME AND THE GROUND GAME ACT, 1880.

Chap. VII. *Game and the Ground Game Act*, 1880.

Property in wild animals generally.

In order to explain the existing rights with regard to game upon land, whether let or kept in hand, it is necessary to state, in the first place, that the common law of the country recognises a qualified property in wild animals, which becomes absolute so soon as they are killed and appropriated. It is this qualified property in the game which is always referred to when the right to game is spoken of; and, in the absence of some statute or contract to the contrary, it belongs to the person having the right to the possession of the soil for the time being. Where a man is absolute owner of an animal it is his *chattel*, and goes to his executors upon his death as part of his personal estate. But where he has only such qualified ownership as belongs to him in respect to wild animals upon his land the animals upon his death go with the land as real estate. It might be thought more correct to say that the right to the wild animals is a mere right to kill and take them incident to the possession of the land, and that no idea of property can be connected with them until they are killed and taken. But the law does attach the notion of property to them in the meantime, and does not consider the fact of killing and taking as of itself sufficient to constitute a right to them. If A. starts and kills an animal on A.'s ground it clearly belongs to A.; but if B., a stranger, starts and kills an

Game and the Ground Game Act, 1880.

animal on A.'s ground it still belongs to A. by virtue of his qualified property in the animal, and not to B. by virtue of the seizure. When A. starts it on his own ground, but follows and kills it on the land of a neighbour, C., it has been decided that it still belongs to A., and good reason for so regarding it is that A., by the fact of following it, is keeping alive his own qualified right in the animal, to the exclusion of the similar right which would otherwise vest in C. by reason of the animal being on his soil. A more difficult case is where a stranger, B., starts it upon A.'s land, and follows and kills it upon C.'s land; there it is said that the property vests in the wrongdoer B., subject to his liability to both owners for trespass; so that in that case alone is the fact of seizure by itself allowed to constitute property in the animal. But this latter proposition, although true with regard to wild animals generally, has ceased to be so with regard to animals which are game within the meaning of statute 1 & 2 Will. 4, c. 32, by sect. 36 of which the person having the right of killing game upon land upon which a poacher is found with recently killed game in his possession can claim such game for his own use.

Meaning of the term "game."

But with one or two such slight exceptions as that just noticed, and subject to the Act to be presently discussed, the statutes which are generally described together under the title of the "Game Laws" do not vary the rights of property, as above stated, in the animals called game, these statutes having for their principal object the attaching of special penalties to offences against that kind of property, and of fixing government dues on licences. The question what animals are *game* within the meaning of these statutes scarcely admits of an answer. One statute has this operation in respect of one set of creatures, and then another statute is passed affecting a set partly, but not entirely, identical with the former. *Hares, pheasants, partridges, grouse, heath* or *moor game*, and *black game*, appear to be the only species which are always and for every purpose to be considered game; whilst *woodcock, snipe, quail, landrail,* and *rabbits* (or conies), are all within the scope of some of the provisions of the game laws. The Game Act (stat. 1 & 2 Will. 4, c. 32), the most important statute on the general subject, defines game as *hares, pheasants, partridges, grouse, heath* or *moor game, black game,* and *bustards* (excluding rabbits); the Act for the Prevention of Poaching (25 & 26 Vict. c. 114) defines it in a totally different manner, including rabbits; whilst an intermediate statute (23 & 24 Vict. c. 90, being the Act by which licences are regulated, hereafter noticed*) requires a licence to be taken out for killing "any *game* whatever, or any woodcock, snipe, quail or land-rail, or any conies or any deer." It is clear, therefore, that the term is too loose a one to rely upon for any purpose except as covering the species above stated to be invariably comprised in it, and that where it is desired that a legal document should operate with regard to any other species the latter should be expressly referred to, as is done in the examples of leases in the text.

Right to game as between landlord and tenant.

We have stated that the property in all wild animals belongs legally to the occupier. The landlord therefore will have no right to enter upon the land to kill any animals unless he has reserved an express right to do so. Precisely the same observation applies to the fish in any stream upon the premises. The reservation of those animals called game became so general a practice on every letting that they came to be considered as being almost the natural property of the landlord, and a tenant who happened to have the shooting on his farm was regarded as having obtained it by some special grace or concession. It was forgotten that the landlord had no right at all, except in so far as he acquired it by express contract, that the law gave the game to the tenant, that in doing so it followed the natural equity of the case, putting the control over, and the right to, the animals into the hands of the person upon whose crops they fed, and that the general

---

* P. 421.

Game and the Ground Game Act, 1880.

adoption of these express contracts, which defeated the law, indicated an unnatural relation between the parties, which must lead to legislative interference. It did, indeed, lead to the passing of the Ground Game Act, 1880 (43 & 44 Vict. c. 47), which we will now cite in full, as its text will afford an opportunity for making such observations as may be useful upon the general subject:—

An Act for the better Protection of Occupiers of Land against Injury to their Crops from Ground Game.—[7th September, 1880.]

WHEREAS it is expedient, in the interests of good husbandry, and for the better security for the capital and labour invested by the occupiers of land in the cultivation of the soil, that further provision should be made to enable such occupiers to protect their crops from injury and loss by ground game:

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same as follows:

Occupier to have a right inseparable from his occupation to kill ground game concurrently with any other person entitled to kill the same on land in his occupation.

1. Every occupier of land shall have, as incident to and inseparable from his occupation of the land, the right to kill and take ground game thereon, concurrently with any other person who may be entitled to kill and take ground game on the same land:

Provided that the right conferred on the occupier by this section shall be subject to the following limitations:

(1.) The occupier shall kill and take ground game only by himself, or by persons duly authorised by him in writing.

(*a.*) The occupier himself and one other person, authorised in writing by such occupier, shall be the only person entitled under this Act to kill ground game with firearms.

(*b.*) No person shall be authorised by the occupier to kill or take ground game, except members of his household resident on the land in his occupation, persons in his ordinary service on such land, and any one other person *bonâ fide* employed by him for reward in the taking and destruction of ground game.

(*c.*) Every person so authorised by the occupier, on demand by any person having a concurrent right to take and kill the ground game on the land, or any person authorised by him in writing to make such demand, shall produce to the person so demanding the document by which he is authorised, and in default he shall not be deemed to be an authorised person.

(2.) A person shall not be deemed to be an occupier of land for the purposes of this Act by reason of his having a right of common over such lands, or by reason of an occupation for the purposes of grazing or pasturage of sheep, cattle, or horses for not more than nine months.

(3.) In the case of moorlands and uninclosed lands (not being arable lands), the occupier and the persons authorised by him shall exercise the rights conferred by this section only from the eleventh day of December in one year until the thirty-first day of March in the next year, both inclusive; but this provision shall not apply to detached portions of moorlands or uninclosed lands adjoining arable lands, where such detached portions of moorlands or uninclosed lands are less than twenty-five acres in extent.

Occupier entitled to kill ground game on land in his occupation not to divest himself wholly of such right.

2. Where the occupier of land is entitled otherwise than in pursuance of this Act to kill and take ground game thereon, if he shall give to any other person a title to kill and take such ground game, he shall nevertheless retain and have as incident to and inseparable from such occupation the same right to kill and take ground game as is declared by section one of this Act. Save as aforesaid, but subject, as in section six, hereafter mentioned, the occupier may exercise any other or more extensive right which he may possess in respect of ground game or other game in the same manner and to the same extent as if this Act had not passed.

All agreements in contravention of right of occupier to destroy ground game void.

3. Every agreement, condition, or arrangement which purports to divest or alienate the right of the occupier as declared, given, and reserved by this Act, or which gives to such occupier any advantage in consideration of his forbearing to exercise such right, or imposes upon him any disadvantage in consequence of his exercising such right, shall be void.

Exemption from game licences.

4. The occupier, and the persons duly authorised by him as aforesaid, shall not be required to obtain a licence to kill game for the purpose of killing and taking ground game on land in the occupation of such occupier, and the occupier shall have the same power of selling any ground game so killed by him, or the persons authorised by him, as if he had a licence to kill game: Provided, that nothing in this Act contained shall exempt any person from the provisions of the Gun Licence Act, 1870.

Saving clause.

5. Where at the date of the passing of this Act the right to kill and take ground game on any land is vested by lease, contract of tenancy, or other contract *bonâ fide* made for valuable consideration, in some person other than the occupier, the occupier shall not be entitled under this Act, until the determination of that contract, to kill and take ground game on such land. And in Scotland, when the right to kill and take ground game is vested by operation of law or otherwise in some person other than the occupier, the

occupier shall not be entitled by virtue of this Act to kill or take ground game during the currency of any lease or contract of tenancy under which he holds at the passing of this Act, or during the currency of any contract made *bonâ fide* for valuable consideration before the passing of this Act, whereby any other person is entitled to take and kill ground game on the land.

For the purposes of this Act, a tenancy from year to year, or a tenancy at will, shall be deemed to determine at the time when such tenancy would by law become determinable if notice or warning to determine the same were given at the date of the passing of this Act.

Nothing in this Act shall affect any special right of killing or taking ground game to which any person other than the landlord, lessor, or occupier may have become entitled before the passing of this Act by virtue of any franchise, charter, or Act of Parliament.

Prohibition of night shooting, spring traps above ground, or poison.

6. No person having a right of killing ground game under this Act or otherwise shall use any firearms for the purpose of killing ground game between the expiration of the first hour after sunset and the commencement of the last hour before sunrise; and no such person shall, for the purpose of killing ground game, employ spring traps except in rabbit holes, nor employ poisons, and any person acting in contravention of this section shall, on summary conviction, be liable to a penalty not exceeding two pounds.

As to non-occupier having right of killing game.

7. Where a person who is not in occupation of land has the sole right of killing game thereon (with the exception of such right of killing and taking ground game as is by this Act conferred on the occupier as incident to and inseparable from his occupation) such person shall, for the purpose of any Act authorising the institution of legal proceedings by the owner of an exclusive right to game, have the same authority to institute such proceedings as if he were such exclusive owner, without prejudice nevertheless to the right of the occupier conferred by this Act.

Interpretation clause.

8. For the purposes of this Act, the words "ground game" means hares and rabbits.

9. A person acting in accordance with this Act shall not thereby be subject to any proceedings or penalties in pursuance of any law or statute.

10. Nothing in this Act shall authorise the killing or taking of ground game on any days or seasons, or by any methods prohibited by any Act of Parliament in force at the time of the passing of this Act.

11. This Act may be cited for all purposes as the Ground Game Act, 1880.

Object of the Act.

It will be noticed in the first place that the Act, with exceptional skill and success, steers a middle course between two extremes. There were those persons, on the one hand, who would have preferred no interference at all with the right of the landlord and tenant to make what bargain they please. There were those, on the other hand, whose view was that the law vesting the game in the tenant was a fair and reasonable law, and that what was needed was a short Act to forbid the making of any agreement which would defeat it. Neither of these views was adopted. The effect of the Act may be best described by saying *that it created and conferred on the occupier a new right in respect of the ground game upon the lands occupied; that, as to the new right, it forbids any agreement or bargaining whatever; but that, subject to the existence and exercise of that right, it leaves the parties with the same rights in, and power of bargaining about, the game which they had before.*

The preamble of the Act declares its object to be to enable occupiers "to protect their crops from injury or loss by ground game," thus sufficiently accounting for the limitations to which the occupier is to be subjected in the exercise of the new right.

Nature of the right conferred upon the occupier.

The right is, by the first words of sect. 1, to be a right concurrent with the right of any other person who may be entitled to kill and take ground game on the same land; that is, *legally* it is not to affect the right of such other person; *practically* it may affect the enjoyment of the latter right by diminishing the quantity of the ground game.

Restrictions on its exercise.

The restrictions imposed on the exercise of the new right are that the game may be killed and taken only by the occupier, *or* by persons duly authorised by him in writing, that the occupier himself and one other person so authorised, and no one else shall *kill it by shooting*, that no person shall be authorised by the occupier *to kill it in any way* except members of his household resident on the land, his ordinary servants, and *one other* person *bonâ fide* hired for the purpose. The word *or* above printed in italics clearly means *and*; the right is not a single right to be exercised by the occupier by himself or by deputy, but not by both, for the next paragraph speaks of the occupier *and* one other person as being entitled to shoot.

Person authorised by occupier to be a member of his household resident on the land.

The clause defining the class of persons whom the occupier may authorise, is the one admitting of most difficulty of application. But the difficulty is inherent in the subject matter, and will generally be solved by the common sense of the persons concerned. A question, for instance, might arise, whether a particular son of the occupier is to be deemed a member of the household resident on the land, and it would have to be decided by a regard to these principles: An uninterrupted dwelling in a particular place is not requisite to constitute residence. Absence, no matter how long, if there be the *power* of returning at any time, and an *intention* to return so soon as it may suit the convenience of the person to return, will not prevent him from being considered as resident. But, in the case of a son, his action in the matter of residence may not be in his own power. Even if a bedroom is kept for him in his father's house, and he stays there, in fact, as often and as long as he pleases, he is not necessarily within the description. The degree to which he is subject to, or emancipated from, the parental control, and his relations to the outside world will be material. In such a case, if he is still at school, or supported by his father at college, he may still be regarded as a resident member of the household. On the other hand, no permanent provision for his accommodation, and no frequency of visits at home, would make him a resident if he had duties elsewhere, proper attention to which would prevent him from continuous living at home at his pleasure, or would put it in the power of an employer to say whether he should go home or not. For instance, an articled clerk in a solicitor's office, or a clerk in a mercantile office, when the office is situate so far off as to make daily visits at home impossible, would not be resident at home; and this rule would seem to apply irrespective of any question as to whether or not the son is an infant. The decisions of the courts on the question of residence mainly arise with regard to residence as a qualification for registration as a parliamentary elector, and discussions upon the subject may be read in the *Law Reports** which may be found in most solicitor's offices.

Or an ordinary servant.

Now that piece work or time work and temporary jobbing contracts are so frequently substituted for the old form of working at fixed weekly wages, another difficulty might be thought to arise as to what is to be deemed "ordinary service" on the land. But an ordinary servant probably means here simply a person already otherwise employed upon the land, whatever be the terms of his employment, as distinguished from a stranger brought there to kill game. Although any number of members of the household or servants may be authorised, only one stranger may be so, and he must be *bonâ fide employed for reward* for the purpose. And these words in italics are material in this particular, that they show that the occupier does not acquire (either under par. (*a*) enabling him to appoint a person to shoot, or under any other part of sect. 1) a power to confer upon a stranger a mere sporting right, that is, a right exercisable for the benefit of the person upon whom it is conferred, and to be exercised by him or not as he may think fit. For the stranger must be *bonâ fide* employed for reward, which means that the reward must be substantial, and not a merely colourable or nominal remuneration given in order to create the qualification. To say to a friend "if you like to come and shoot with me to-morrow, I will reward you with half the bag," would undoubtedly be colourable, and insufficient to satisfy the Act. On the other hand, the Act does not require a money payment, and to authorise a person to come at any time upon the land and kill and appropriate as much game as he can get, upon condition of

And not a stranger, except one stranger employed for reward.

---

* See *Ford* v. *Hart* (L. Rep. 9 C. P. 273), and *Ford* v. *Drew* (L. Rep. 5 C. P. Div. 59).

his keeping down the ground game, might be such an employment as the Act requires, the condition showing that a service to the occupier was intended and the right to all game killed constituting a sufficient reward.

The form of the authority to be given by occupier.

It is to be observed, however, with regard to the stranger so employed, that the terms of his employment need not be in writing, although the authority to kill the game must be so. The person authorised, within whatever description he may come, must always produce his authority on demand, the words of the Act (par. (*c*)) in effect saying that on default in doing so he may be regarded as a poacher or trespasser; although the authority has been in fact given. Therefore, when in pursuit of game, the person authorised should always carry the written document upon his person. This may be in the following form:

> I, A.B., do hereby authorise C.D. to kill hares and rabbits [by fire-arms] on my land called situate in the parish of in the county of .
>
> Dated the day of 190 .
>
> (Signed) A.B.

If the authority is to be for a specific period this will of course be added. But in any case the authority will be revocable by a similar writing, unless it is given for a valuable consideration. It may no doubt be limited so as to refer to rabbits only or to hares only. But when the one person whom the Act allows has the authority to shoot rabbits, or the one stranger allowed has the authority to destroy rabbits, the power of conferring the authority upon anyone to shoot, or upon a stranger to kill generally, is exhausted, and no similar authority could be given to a fresh person with regard to hares until the former one was revoked.

Who is to be deemed an "occupier of land."

In sub-sect. (2) is to be found the only attempt which the Act contains to define the meaning of the words "occupier of land." An occupier generally means a "tenant, or person not the owner;" but from the first part of sect. 1 it appears that the new right is to belong to the person in actual occupation, whether he be owner or tenant; so that the Act does more than protect tenants, it prevents owners who keep their lands in hand from parting with the whole sporting rights over the lands. And sub-sect. (2) indicates that "land" is to include the soil of the country generally, irrespective of the purpose to which it is applied. As the preamble says that the Act is "to enable occupiers to protect their crops," it might be at first supposed that in the case, for instance, of a letting where there could be no crops, there could be no protection given by the Act. But this sub-section shows that an occupation for grazing purposes is sufficient to entitle to the right, if the occupation be for more than nine months. It may be observed also that by the statute 13 & 14 Vict. c. 21, s. 4, it is enacted that a most extensive meaning shall be given to the word *land* when it occurs in future statutes, unless an intention appears to the contrary.

Occupiers' right with regard to moors.

The object of sub-sect. (3) is suggested by the dates to which it refers. The right is not to be exercised over moors except between the 11th of Dec. of the year and the 31st of March in the next—that is, it is not to be exercised until after grouse shooting is over, and then only until the pairing season begins.

The new right as contrasted with other and more extensive rights.

In concluding our observations upon sect. 1, which confers this new right upon occupiers, it may be observed that the whole of the restrictions and limitations contained in sub-sects. (1) and (2) show how entirely distinct is the right from any which has heretofore existed in any one. The rights existing at the passing of the Act, and which may still exist in fact and in law, although the beneficial exercise of them may in some cases be practically prevented by the new right now created, are as follows:

(1.) The right of the tenant who has the game, whether furred or feathered, or both, by reason that it was not reserved to the landlord upon the letting; such a tenant can permit whatever persons he pleases to kill and take his game, either by firearms or otherwise, provided they

Game and the Ground Game Act, 1880, *sects.* 2, 3, *and* 4.

have obtained the necessary licence or certificate to kill game.

(2.) The right of an owner in occupation to whom, if he has not granted the game rights to another, the same observations apply.

(3.) The right of an owner not in occupation, but having the game rights because he reserved them on letting his land, who will generally have, by the words of the reservation, an express power of authorising others to enter upon the land and kill the game, and to whom such a power is also given by stat. 1 & 2 Will. 4, c. 32, s. 11.

(4.) The right of the grantee or lessee of game rights over land otherwise enjoyed and occupied by some one else, whose power to authorise other persons to shoot, &c., will depend legally upon the terms of his grant, or lease, but who will, as a matter of fact, almost invariably have such a power. A right of this kind to enter and kill game can only be legally conferred by deed;* but in cases (1) and (3) no formality will be requisite to vest the game in the tenant or the landlord, as the case may be, other than such formality as is required in the creation of the tenancy. If the letting is for a term not requiring the deed, the game rights will either pass to the tenant by virtue of his tenancy, or may be reserved to the landlord without deed.

Sects. 2 and 3 of the Act require no comment after that which has already been made. They do in effect merely enact that the new right is to be distinct from and in addition to any other right which the occupier may have, whether as owner, tenant, or otherwise (and we have just seen what are the various other rights which may exist), and that the right cannot be transferred so as to be severed from the occupation of the land, nor can the right to exercise it be defeated by any bargain or agreement whatever.

Game licences.

The question of licences, which is referred to in sect. 4, is one of general interest to sportsmen. Of the ten shilling gun licences it is unnecessary to speak, except to observe that a licence to kill and take game obviates the need for a gun licence. But there are, beside the gun licence, two distinct kinds of licences to be regarded with reference to game. There is the licence to kill and take, and the licence to deal. The latter applies to such animals as are game under 1 & 2 Will. 4, c. 32.* The former applies to game and to some other animals, as rabbits, deer, woodcock, &c., as will be seen below. When a person has a licence to kill and take, he can dispose of those animals which are not game as he pleases; he can only sell the game to a licensed dealer; and the exemption from the licence required for *killing* and *taking* will not give him any greater power of *selling* than he would have had by obtaining the licence to kill and take, that is, a power of selling to a dealer. This is the position of the occupier under the Act.

---

* But courts might *specifically perform* a written agreement to grant such a right: (*cf.* p. 291).

But the subject may be pursued a little further. By the Act 11 & 12 Vict. c. 29, it was enacted that persons in the actual occupation of inclosed lands, or any owner thereof having the right of killing game thereon, might by himself, or by any one person authorised by him in writing (the writing may be registered with the clerk of petty sessions), kill any hare without paying the duty; and that no duty should be payable in order to course hares or hunt them with beagles. And the subject of licences generally is now regulated by the Act 23 & 24 Vict. c. 90, of which the following are the important sections:—

2. In lieu of the duties hereby repealed there shall be granted, charged, and paid for and upon the several licences and certificates to take or kill game, and licences to deal in game, hereinafter mentioned, the respective duties or sums of money hereinafter expressed or noted: that is to say,

For a licence in Great Britain, or a certificate in Ireland, to be taken out by every person who shall use any dog, gun, net, or other

---

* *Vide ante*, p. 411.

CHAP. VII. *Game and the Ground Game Act*, 1880, *sect.* 4.

engine for the purpose of taking or killing any game whatever, or any woodcock, snipe, quail, or landrail, or any coneys, or any deer, or shall take or kill by any means whatever, or shall assist in any manner in the taking or killing by any means whatever, of any game or any woodcock, snipe, quail, or landrail, or any coney or any deer:

If such licence or certificate shall be taken out after the fifth day of April and before the first day of November,

To expire on the fifth day of April in the following year	£3 0 0
To expire on the thirty-first day of October in the same year in which the licence or certificate shall be taken out ...	£2 0 0

If such licence or certificate shall be taken out on or after the first day of November,

To expire on the fifth day of April following	£2 0 0
Provided always that any person having a right to kill game on any lands in England or Scotland shall be entitled to take out a licence to authorise any servant for whom he shall be chargeable to the duty of assessed taxes as a gamekeeper, to kill game upon the same lands, upon payment of the duty of	£2 0 0
And for every licence to deal in game in England, Scotland, or Ireland to be granted under this Act	£2 0 0

4. Every person before he shall in Great Britain take, kill, or pursue, or aid or assist in any manner in the taking, killing, or pursuing by any means whatever, or use any dog, gun, net, or other engine for the purpose of taking, killing, or pursuing any game, or any woodcock, snipe, quail, or landrail, or any coney or any deer, shall take out a proper licence to kill game under this Act, and pay the duty hereby made payable thereon; and if any person shall do any such act as heretofore mentioned in Great Britain without having duly taken out and having in force such licence as aforesaid he shall forfeit the sum of twenty pounds.

5. The following exceptions and exemptions from the duties and provisions of this Act as hereby made and granted; that is to say:

Exceptions.

1. The taking of woodcocks and snipes with nets or springes in Great Britain.

2. The taking or destroying of coneys in Great Britain by the proprietor of any warren or of any inclosed ground whatever, or by

the tenant of lands, either by himself or by his direction or permission.

3. The pursuing and killing of hares respectively by coursing with greyhounds or by hunting with beagles or other hounds.

4. The pursuing and killing of deer by hunting with hounds.

5. The taking and killing of deer in any inclosed lands by the owner or occupier of such lands, or by his direction or permission.

Exemptions.

1. Any of the royal family.

2. Any person appointed a gamekeeper on behalf of Her Majesty by the commissioners of Her Majesty's woods, forests, and land revenues under the authority of any Act of Parliament relating to the land revenues of the Crown.

3. The person aiding or assisting in the taking or killing of any game, or any woodcock, snipe, quail, landrail or coney, or any deer, in the company or presence and for the use of another person who shall have duly obtained, according to the directions of this Act, and in his own right, a licence to kill game, and who shall by virtue of such licence then and there use his own dog, gun, net or other engine, for the taking or killing of such game, woodcock, snipe, quail, landrail, coney, or deer, and who shall not act therein by virtue of any deputation or appointment.

4. And as regards the killing of hares only, all persons who under the provisions of the two several Acts 11 & 12 Vict. cc. 29 and 30 respectively are authorised to kill hares in England and Scotland respectively, without obtaining an annual game certificate.

10. If any person shall be discovered doing any act whatever in Great Britain, in respect whereof a licence to kill game is required under this Act, by any officer of inland revenue, or by any lord or gamekeeper of the manor, royalty or lands, wherein such person shall then be, or by any person having duly taken out a proper licence to kill game under this Act, or by the owner, landlord, lessee, or occupier of the land on which such person shall then be, it shall be lawful for such officer or other person aforesaid to demand, and require from, the person so acting the production of a licence to kill game issued to him; and the person so acting is hereby required to produce such licence to the person so demanding the production thereof, and to permit him to read the same, and (if he shall think fit) to take a copy thereof or of any part thereof, or in case no such licence shall be produced to the person demanding the same as aforesaid then it shall be lawful for the person having made such demand to require the person so acting forthwith to declare to him his Christian and surname, and place of residence, and the place at which he shall have taken out such licence; and if

CHAP. VII. *Game and the Ground Game Act*, 1880, *sect.* 5.

such person shall after such demand made, wilfully refuse to produce and show a licence to kill game issued to him, or in default thereof, as aforesaid, to give to the person so demanding the same his Christian and surname, and place of residence, and the place at which he shall have taken out such licence, or if he shall produce any false or fictitious licence, or give any false or fictitious name or place, or if he shall refuse to permit any licence which he may produce to be read, or a copy thereof, or of any part thereof, to be taken, he shall forfeit the sum of 20*l.*

Effect of the Act in existing contracts.

The saving clause of the Ground Game Act, sect. 5, materially diminishes the effect of the Act, which by reason of that clause will not, where there is a lease or other contract affecting the game rights, have any operation at all until the determination of such lease or other contract. Where there is no such lease or contract the new right is confirmed as on the 7th Sept. 1880 (the day of the passing of the Act). Where the contract is a tenancy at will or from year to year, the new right is to be exercisable from the day on which the tenancy could have determined, if notice to determine had been given at the time of the passing of the Act. A tenancy at will is determinable immediately on notice. A tenancy from year to year is determinable in some cases at one year's, in others at half a year's notice to quit at the end of a particular year of the tenancy, according to the rule previously referred to.*

Effect of the Act on the general law.

The one clause of the Act which is of general application is sect. 6, which applies to all "persons having the right of killing ground game under this Act *or otherwise.*" Hitherto the Act has been exclusively concerned with the exercise of and dealing with the new right which it has itself created. Now it lays down a sweeping prohibition immediately (that is from the time of the passing of the Act), applicable to all persons, whatever may be the nature of their right to kill ground game, prohibiting night shooting, spring traps above ground, or poison. This and the remaining sections of the Act appear sufficiently to explain themselves; though as to sect. 10, it may be observed that the only enactment, having reference to the *time* of killing ground game, appears to be 1 & 2 Will. 4, c. 32, s. 3. This creates a close time for pheasants, partridges, &c., but does not provide for any close time for hares and rabbits.* It enacts, however, that no game shall be killed or taken on a Sunday or Christmas Day, a prohibition which extends to hares, but not to rabbits, as the latter are not, as we have before stated, game under that Act.

---

* See p. 354.

---

* Efforts have been made from time to time to create a close time for hares, but so far without direct success. A step, however, has been taken in this direction by the Hares Preservation Act, 1892 (55 Vict. c. 8), which enacts that during the months of March, April, May, June, and July, it shall not be lawful to sell or expose for sale in any part of Great Britain any hare or leveret.

CHAPTER VIII.

THE AUTHORITY OF A LAND AGENT.

CHAP. VIII. *The Authority of a Land Agent.*

INASMUCH as this book is addressed to land agents rather than to persons carrying on the business of estate and house agents and engaged in buying and selling property on commission, the only points which will present themselves for discussion in this chapter are the nature of the authority requisite for the performance by the agent of different acts of management, and the nature of his liability as an agent.

Transactions with agents generally.

The authority of an agent assuming to contract an engagement on behalf of a principal is very frequently not proved to or inquired into by the person with whom the contract is made; and as the question whether or not the contract is binding on the principal depends upon the nature of the agent's authority, it may at first sight seem remarkable that such proof or inquiry is so generally omitted. The reason is that the nature of the agent's authority often cannot in practice be decided by asking information of the principal, or by asking the agent for proof. If this were requisite all business which is done through the medium of agents, such as brokers or land agents, or clerks in an office, could not possibly be carried on. Therefore, although the agent may be liable in damages to the principal if he transgresses his instructions, the principal is nevertheless liable to the person with whom his agent makes a contract, if it is made under circumstances which entitle such person to assume that the agent is authorised to make it. If the agent is engaged in a particular occupation or business, and he makes on behalf of the person employing him a contract such as persons engaged in that business are in the habit of making on behalf of their employers, the contract will be binding on the employer or principal, although he may have expressly told the agent not to make it. For the law calls an agent of that kind a *general* agent, and says that it is not necessary for persons dealing with a general agent to ascertain whether his acts are warranted by the precise terms of his instructions.

General and special agents.

"The liability of the principal mainly depends not on the instructions which he may have given to the agent, but on the question whether the agent was a *general* or a *special* agent. Firstly, if a servant or agent be accredited and invested by his master with authority to act for him in all his business of a particular kind; or, secondly, if the agent, being himself engaged in a particular trade or business, be employed by the principal to do certain acts for him in that trade or business, he will in such case be held to be with reference to his employment a *general* agent; and—the public having no means of knowing what, in any particular case within the general scope of the agent's powers, are the wishes and directions of the principal—the latter will be liable, although his orders be violated. In such a case the principal having, for his own convenience, induced the public to consider that his agent was possessed of *general* powers, is bound by the exercise on the agent's part of the authority which he has thus allowed him to assume:" (Chitty on Contracts, p. 200, 8th Ed.)

A *special* agent, on the other hand, is a person whose authority in a particular transaction cannot be assumed to exist either because of his having a general authority to act for the principal in transactions of that kind, or because he is himself engaged in a trade or business, in the exercise of which it is usual for such authority to be given. Persons dealing with a special agent are bound to ascertain what authority his principal has actually given him; for the principal or master will not be bound by any act of the agent not warranted by the terms of his instructions.

These principles have been illustrated in this way:—"If a man send his servant with ready money to buy goods, and the servant buy upon credit, the master is not chargeable. But if the servant *usually buy for the master upon credit,* and the servant buy some things without the master's order, yet if the master were trusted by the trader, he is liable. That is to say (the servant not being by the nature of his employment a general agent to buy goods for his employer), if the master gives him money to go to a shop and buy them, he is a special agent, and can only bind the master by following his instructions, that is, by paying for the goods when he received them; but if the master has been in the habit of employing him to buy goods upon credit, then the shopkeeper is entitled to assume that he has a general authority to buy goods upon credit. The servant has become by the master's conduct a general agent to act for him in business of that kind, and the master is liable without reference to the terms of the orders which he gave to the servant in the particular case."

In what sense a land agent is a general agent.

This being the general principle of the law, it must be applied to the circumstances of each case as it arises; for, although it is clear that every land agent acts within certain limits as a general agent, it is difficult to state generally what these limits are. It would seem that, as a land agent's function is primarily one of oversight, an authority to perform definite acts and make contracts is scarcely inherent in the nature of his office. The nature of the authority of a particular agent, then, will not be easily found by endeavouring to define the office of an agent, but rather by ascertaining what particular kind of business the proprietor has, by his conduct, shown that the agent is authorised to act in; and this is a matter of evidence rather than of law. This is equivalent to saying that his general agency is of the first, rather than of the second, kind referred to by Mr. Chitty.

Nevertheless there are certain acts which have been definitely decided not to be within the scope of an agent's employment as such. He has no authority, as an agent, to enter into agreements to grant leases. And as this is so, he would likewise have no authority to give a notice to quit. Nor has he any power to distrain.

The kind of business in which the agent is frequently authorised by the conduct of his employer to act as a general agent will readily suggest itself. If, for instance, he has been allowed in practice to pledge his employer's credit in making purchases, the latter will be bound to pay for any particular article which the agent may buy for him of a dealer aware of the practice, and giving credit to the employer on the faith of it; even though the agent may have been expressly forbidden to buy the particular article. So, although it cannot be said that it is inherent in the office of an agent that he should have a general authority to hire and dismiss bailiffs and servants, such an authority may no doubt be conferred upon him by his employer's conduct. Even with regard to rents, to receive which the agent will generally have an express and written authority; if he has been accustomed to take them, and sign receipts without such an authority, the courts would certainly regard him as a general agent in the matter, and his receipt would discharge a tenant who had no notice that the rent was not to be paid to him as theretofore. But it may be observed here that an agent having an authority (whether general or special) to receive payments on behalf of the principal, cannot bind the latter by accepting anything but money—as by taking a bill of exchange—unless there is some direct evidence to show that his authority enabled him to do so, or that it is a customary mode of settling.

Cases in which a special authority may be necessary.

In these matters, therefore, in which the agent is not, either by the nature of his office, or by his employer's conduct, authorised to act as a general agent, he will require an express authority to enable him to act as a special agent, and persons dealing with him must see that he has it, and abide by the terms of it, for if he does not his principal will not be bound.

Leases.

The express authority need not, as a general rule, be in writing, though in some cases this is requisite. In the case of leases not required by the Statute of Frauds to be in writing (*ante*, p. 356), the proprietor may verbally authorise an agent to make them, and the agent may then make them either verbally, or by a writing signed on behalf of his employer, according to the terms of his instructions. But as to leases required by the first section of that statute to be in writing (*ante*, p. 356), a reference to the section will show that it enacted that where such leases are made by an agent he must be authorised in writing to make them. These leases are now, however, to be made by deed (*ante*, p. 356), and it is a rule of the law that an agent can only execute a deed on behalf of his principal if he is authorised *by deed* to do so.

Notice to quit.

An agent need not have a written authority in order to give a tenant notice to quit. But his authority, although only oral, must be express at the time when the notice is given, or at latest when it begins to operate. A subsequent recognition or adoption of the agent's act by the principal is not sufficient in this case, although we shall presently see that it is generally so in others.

Distress.

Nor does an agent require a written authority in order to distrain upon his employer's tenant. But, as we have said, he must be specially authorised to do so. An authority to receive rents, and discharge the tenants by his receipts, will not empower him to distrain.

Sales.

With regard to sales, even when a contract for sale is required to be in writing—as are contracts relating to land or any interest in or concerning it, and contracts in certain cases respecting chattels, the writing may be that of an agent appointed by word of mouth. For sects. 4 and 17 of the Statute of Frauds (*ante*, p. 357, note), which make it necessary that the contract be in writing, say that the writing may be signed by an agent "lawfully authorised," instead of by an agent "lawfully authorised in writing," which are the words of sect. 1.

With reference to the subject of sales, it may be well here to point out to the agent that, where he is authorised to make them, he must take care that the contract for sale is made binding on the purchasers. If, for instance, it is a sale of land or of an interest in or concerning it, the purchaser or his authorised agent must sign a written memorandum, otherwise, by sect. 4 of the Statute of Frauds, the purchaser will not be bound. If it is a sale of chattels of the value of 10*l.* or upwards, there must (by sect. 17) be part delivery and acceptance, or part payment, or a similar memorandum. In the case of some sales made by an agent, as, for instance, of timber and underwood, it will be difficult for him to know whether what he is selling is an interest in land or a chattel, because, as we have seen in a previous chapter (*ante*, p. 344), things growing upon the land are legally a part of the land until they are severed. But it has been decided that a sale of growing timber, to be felled at once, whether by the purchaser or the vendor, is not a sale of an interest in land requiring a written contract. Yet, regarding it as a sale of chattels, a memorandum signed by the purchaser or his agent will generally be necessary under sect. 17, unless there is part payment at the time the bargain is made. And it may be laid down as a general rule that an agent in all cases of this kind should procure the signature of the purchaser or his agent to the terms of the bargain.

Purchases.

It is scarcely necessary to make any remarks upon the subject of purchases. The question of purchasing goods upon credit has already been incidentally alluded to; and as to purchases of land or any interest therein, it is only necessary to refer again to sect. 4 of the Statute of

Frauds (*ante*, p. 357, note), from which it appears that an agent, to purchase need not be authorised in writing. But when an agent produces a written authority, whether to purchase an estate or to do any other act, the principal will be bound to persons dealing with the agent upon the faith of the written authority, although he may have subsequently varied the terms of his instructions to his agent.

Appointment of sub-agents.

It is a maxim of the law that an agent cannot delegate his authority. Therefore, if an agent be authorised to do any act—as, for example, to make a valuation—he must perform the act himself, and cannot, without a further express authority, employ a third person or sub-agent to do it for him.

Mode of signature by agent.

When an agent has to execute a deed on behalf of his principal, he will execute it, not in his own name, but in that of the principal—thus "A. B. (seal) by E. F., his attorney"—the agent in this case being called an "attorney" because the instrument appointing him to execute the deed is called a "power of attorney." This instrument, or a copy of it, the party in whose favour the deed is made will generally require to have handed over to him, as evidence that the execution of the deed was authorised by the principal. But a matter involving a deed will generally be transacted under the supervision of a lawyer; and it is more important to point out to the agent the proper mode of making ordinary written contracts on behalf of his employer. For he must take care that in appending his signature he signs expressly as an agent—thus " (Signed) A. B. by E. F., his agent," or (Signed) by E. F., on behalf of and as agent for the above-named A. B." If he *signs* in his own name merely, he may make himself personally liable on the contract, although in the body of it he is referred to as acting as agent for somebody else.

Personal liability of agent.

For it is to be recollected that there is nothing to prevent an agent from contracting a private and personal liability on behalf of his principal; and if he does not expressly contract in the name of the principal, it is a question to be decided on the whole terms of the contract whether or not the parties intended that the agent should be personally responsible. And if the agent contracts in his own name he cannot relieve himself from personal liability by showing that the other contracting party knew that he was agent for some one else. So if he conceals his principal and contracts as though he himself were the real contracting party, the person with whom he contracts is entitled to sue him on the contract, notwithstanding the subsequent discovery of the fact that he was in reality an agent. But, although he will be subject to the liabilities, he will not have all the rights of a principal, in such a case; for the principal, on whose behalf the contract was really made, is at any time entitled to step in and require the contract to be fulfilled to himself personally.

An agent making a contract professedly on behalf of another is considered to promise by implication that he has the authority of that other to make it. If he has no such authority, or if he exceeds or misrepresents the authority which he actually has, the principal will not in a case of special agency, as we have seen, be bound. But the agent will be liable to the person with whom the contract is made for a breach of the implied promise that he has the authority which he represents himself to have.

In the above observations as to the personal liability of the agent, it will be observed that we have only touched upon the question of his liability to third parties. His liability to his employer is a totally different matter, as to which it is sufficient to state that he will be liable in damages for any breach of the instructions given to him.

Ratification of unanthorised ac s.

In conclusion, where the agent performs an act on behalf of his principal which he has no authority for, he should take care to get the principal to ratify it at once. The effect of such a ratification is to place all the parties in precisely the same position as though the necessary authority had been given in the first instance; and, so far as regards the liability of the principal to third parties, his ratification and adoption of a contract made by his agent on his behalf without authority will be presumed from very slight evidence.

APPENDIX.

THE VALUATION AND MEASUREMENT OF TIMBER.

MR. DANIEL WATNEY writes to the *Journal of Forestry* :—"I have read with much pleasure the very interesting paper in your last number upon this subject, by Mr. A. J. Burrows, and as I have for many years viewed and valued large quantities of timber in most counties in England and Wales, and have had the management of many residential and agricultural estates, I should like to make a few remarks, and give the result of my experience on some of the points treated so ably by Mr. Burrows.

"In valuing timber on a residential estate on the occasion of a sale, I have invariably valued the 'ornamental trees' at their full commercial market value, and not, as Mr. Burrows states, at 'half-price.' As a rule, the largest, and generally the most valuable, timber on a residential estate is purely ornamental, and if that were excluded from the valuation, or only valued at half-price, the purchaser would obtain for nothing a very important element of value. Of course, the mode of valuing entirely depends upon the conditions of sale, but during my practice I have never found the conditions exclude from valuation the ornamental timber; and, as a matter of fact, if they did so exclude them, disputes would almost inevitably arise as to what were, or were not, ornamental trees. If, in the contract for sale and purchase of the estate, it was simply stated that the timber and timberlike trees were to be valued in the usual way, then by custom, all the trees, without distinction, would be valued, down to the value of 1*s.* per stick inclusive. It is well-known that a tenant for life, without 'impeachment of waste,' may cut any timber on his estate except 'ornamental timber, or that planted or left standing for ornament or shelter'; but in the exercise of his right I have known many disputes and much litigation arise.

"Mr. Burrows gives the prices of timber at per cubic foot, but timber sold off an estate to a timber merchant is invariably sold by 'quarter-girt' measurement, whether standing or felled. When converted by the timber merchant, it is sold by him either as 'scantling,' 'squared timber,' or by the 'foot cube.' Take, for instance, a tree with a length of 10ft. and a diameter of 17in.; the cubical content of this tree is 15ft. 9in., but the quarter-girt measure is only 12ft. 6in.; therefore, if the price quoted is 2*s.* per foot cube, it is equal to rather more than 2*s.* 6*d.* per foot quarter-girt measure.

"There are four different modes of measurement of timber known and practised in the timber trade—'quarter-girt,' 'true-content,' 'die-square,' and 'squared' or 'calliper measure.'*

"Take a tree 20ft. long and 24in. in diameter, the measurement by each of these modes will be as follows:—

'Die-squared' (17in. sq.)	40ft. cube.
'Quarter-girt'	49ft. rough measure.
'True-content'	62ft. cube.
'Squared' (calliper measure) ...	74ft.

"In classing oak or elm timber, those trees measuring 27ft. and upwards are frequently put at a higher value per foot than those under 27ft. for the reason that at the Government Dockyards no trees are taken under 40ft. calliper measure, and 27ft. quarter-girt is equal to 40ft. 'squared' or calliper measure. With regard to tellars, or saplings, I have always valued them according to their growth, and not according to their girt; some tellars at 5in. quarter-girt are only worth 1*s.*, whilst others are worth 3*s.*, 4*s.*, and even 5*s.* In estimating the value of timber upon any large area, I think it hazardous to endeavour to arrive at an accurate or even an approximate valuation by measuring and valuing the trees on small selected areas, more particularly if the trees are of any size and different varieties, and in such cases I have always measured and valued the trees separately. In measuring standing timber I use leather straps and jointed bamboo poles (with a cane top) 20ft. in length, and I have Timber Tables pasted in my note-book for reference in case of need.

---

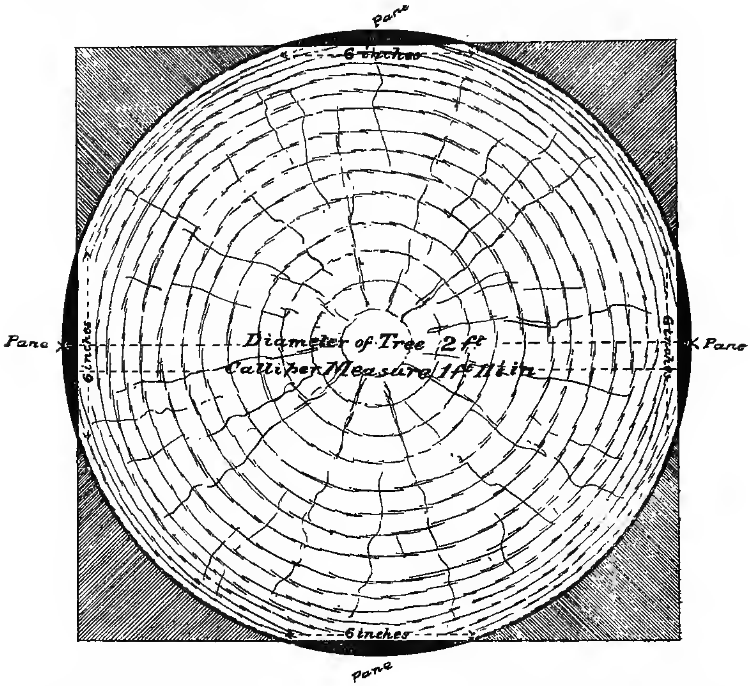
* "The rate for hewing English oak timber for His Majesty's Dockyards is:—The timber to be so hewn or squared that at each of the measuring places the *pane* (that is, the portion of the tree hewn off with the axe) shall not be less than quarter the diameter of the piece.

"By the rule a piece 12 inches calliper in diameter would require a pane of 3 inches, so that the measurement by calliper as compared with the string or strap, is as 75 to 50." (*See* diagram page 438.)

"It may not be generally known that in valuing standing timber for sale, it is the custom in Kent only to measure the spire of the tree, and in many other counties the spire and one limb, so that the purchaser gets all the other limbs or branches thrown in. With reference to the bark on oak trees, great difference of opinion exists as to the quantity obtainable from a load, or 50ft. of timber quarter-girt measure, and for the reason that so much depends upon the situation of the trees. In speaking of the average quantity of bark produced from a load of oak timber, no inference should be drawn from any particular lot of timber, but from the average of the whole fall during the season. In Surrey, Kent, and Sussex, for instance, small timber, grown singly in hedgerows, with short bodies and large heads, has been known to produce from 12 to 14 cwt. of bark per 50ft., although this quantity is not often obtained; but most probably on the same estate, and in an adjoining coppice, trees standing close together, and well sheltered, would not produce a load, or 45 cwt., of 'hatched' bark which is equal to 50 cwt. in the rough state, or very nearly 8½ cwt. per load of timber.

"As to the proper allowance to be made for bark in measuring oak or elm timber, I do not quite agree with Mr. Burrows, for the reason that my practice has not been 'to give half an inch under one foot girth and an inch for all beyond,' but to allow at the rate of one inch per foot throughout, unless the trees are very rough, and then a greater allowance is necessary. Much more might be written upon this important and interesting subject, but I have endeavoured to confine my remarks as far as possible to those points on which I differed from Mr. Burrows, although, at the same time, I consider his paper a most valuable aid to any young forester or land agent."

"In the following diagram the panes or pieces that were hewn off are shown in black, and it is obvious that the square taken by the callipers included the spaces lightly shaded in the diagram, and was altogether an erroneous mode of measurement."



The above tree, 20ft. long by 24in. diameter, will give the following results :—

By quarter-girt ...	49ft. cube.	(17in. eq.) Die-squared ...	40ft. cube.
True-content	62ft. ,,	Squared (calliper measure)	74ft. ,,

INDEX.

A.

Acacia (False), 139
Accidents to horses, 227
Act, Agricultural Holdings (England) 1883, 47, 50, 65, 367, 384, 399
    Extraordinary Tithe Redemption, 38
    Game, 25
    Ground Game, 409
    Hares Preservation, 425
    Improvement of Land, 351
    Licences regulation, 420
    Prevention of Poaching, 411
    Settled Estates, 341
    Settled Land, 341
    Statute of Frauds, 356
Adulteration of bone dust, 60
Advice to Land Agents, 65
Agent, 427
Agreement (Supplementary), 20
    Example B, 14
    for a lease, 21, 358
    of sale, 172
Alder, 125, 187
Allotments, 215
Araucaria imbricata, 155
Arbitration, 12, 19
Area of triangles, 321
    trapezoid, 321
    rules for ascertaining, 296
Arithmetic, rules of, 315
Artificial manure, 65, 233
Ash, 112, 185
    heaps, 90
Assignment, 9, 17, 369
Auction, sale by, 167
Auctioneer, duty of, 168
Auditor, 314
Austrian pine, 149
Award, 71

B.

Bailiff, 212
Bankruptcy, 50
Barberry and smut, 305
Barge roof, 296, 298
Bark, 106, 159, 159
Bearing rein, 227
Beech, 114, 187, 202
Beer, 215
Bill of Exchange, 169
    Stamps, 170
Biota, 155
Birch, 123, 187
Blights, 301
Bone, 53, 59, 61
    compensation for, 61
    effect of dressing with, 61
    object of dressing with, 61
Borrowing money, 52
Breeding of horses, 228
Building, 52
    cost of, 298
    material, 274
Burgundy pitch, 152

C.

Cake, 10, 17, 62
Capacity of tanks, 300
Capital, 52
Carboniferous group, 278
Cash book, 308
Catch crops, 224
Cattle, weight of, 87
Cecidomyia tritici and *destructor*, 302
Cedrus deodar, 155
Cements, 286
Certificated dairymaid, 217
Chalk, 276, 284
Chalking land, 53, 57
Chambers of agriculture, 66
Change of seed, 236
Charcoal, 124
Charring butts, 194
Chestnut, horse, 117
    Spanish, 119, 185
Circles, 320

Cirencester Chamber of Agriculture, 67
Clamp, the, 293
Clay burning, 53, 58
Clay slates, 279
Claviceps purpurea, 306
Clerk of works, 268, 312
Clover leys, 718
Common thorn, 200
Compensation, 49, 60, 61, 63, 84
Concrete, 289
Conditions of sale, 171
Coniferæ, 140
Consumption of hay and straw, 46, 370
Coppice, 100
Copyholds, 336
Corn, consumption of, 64
Cost of harvesting, 238
  lease, 359
Cottages, 270
County rates, 365
Covenants, 360
  lessee's, 8, 16, 24, 29
  to cultivate, 370
  to pay rent, 360
  to repair, 367
Covered yards, 231
Cows, food of, 218
  calving of, 218
  illness of, 218
Craigleith quarry, 280
Cryptomeria Japonica, 155
Cultivation, restrictions, 45
Cupressinæ, 155
Custom incorporated in lease, 97
  of country, 48, 70
  what is, 383
Customs of manors, 338
Cutting timber, waste, 344
  exception to rule, 345

D.

Dairy cows, 217
  maid, 217
Damage by fire, 9, 368
Damp, course, 272
Dates and parties, 6, 14, 22
Dead fences, 194
Decimals 162, 315
Deed, when necessary, 356
Deliver up in repair, 11, 18
Demise, the, 7, 14, 358
Devon Chamber of Agriculture, 67
Dilapidations, 85
Dipping sheep, 225
Diseases of larch, 143
Disentailing, 342
Distance in planting, 180, 182
Distress, 361, 430
District rates, 365
Ditches, 10, 373
Divisions of a lease, 23, 24
Dolomite, 282
Double entry, 314
Drainage, 53, 272
  for trees, 101
Draught kiln, 293
Dung, 230
  farmyard, 10, 18, 80, 230
Duodecimals, 162, 318
Duties of auctioneer, 168
  land agent, 3, 426

E.

Early cutting of hay, 236
Earth closets, 273
Economy of good fences, 188
Eggs, keeping of, 230
Elder, 135
Elm, 109
  Wych, 111
Embanking, 133
Emblements, 382
English crag, 276
Ensilage, 256
Entry to view, 9, 402
Equitable waste, 349
Estate accounts, 312
Estate tail, 334
  for life, 334
    years, 334
  in fee simple, 333
  legal meaning of term, 331
Examples of tillages, &c., 73, 298, 311
Exceptions, game licences, 422
  game, 7, 15, 25
  minerals, 15, 27
  timber, 7, 15, 25
Execution of lease, 13
Exemption, game licences, 413
Experiments, 211
Extraordinary tithe, 38

F.

Failure of crops, 75
Fallow, 77
Farm accounts, 212, 308
  balance sheet, 311
  buildings, 52, 268
  valuation, 70

Farmyard manure, 230
Fat stock, 219
    hours of feeding, 219
    selling of, 220
        by weight, 220
Feeding value of hay and straw, 79
    roots, 77
Fences, 188
    dead, 194
Feudal origin of property in land, 331
Fictitious rent, 4
Field hay, 237
Fines, 338
Fire, 9, 11, 18
Fixing rent, 3
Fixtures, 85, 373
Flare kiln, 292
Flints 284
Fly attack on sheep, 225
Foals, treatment of, 228
Folding, 81
Foresters' accounts, 312
Form of lease, 6
    tender, 173
    valuation, 91, 96
Fourcourse rotation, 45
Fractions, 319
Frauds, Statute of, 356
Freehold, meaning of, 335
    tenants of manor, 337
Freestone, 282
Furze, 205

G.

Game, 7, 15, 25, 373, 410, 411
    Act, 411
    licences, 413, 420
Gault, 276
Geological knowledge, 274
Girt strap, 163, 165
Goat willow, 133
Grafting, 117
Granite, 279
Grasses, 207
Greensand, 276
Greenstone, 279
Ground Game Act, 26, 409
Grubbing hedges, 192
Gypsum, 61, 289

H.

Habendum, 7, 23
Half tillage, 82
Hares' Preservation Act, 425
Harness, 227
Harvest, 238
Hawthorn, 139, 191
Hay, valuation of, 11, 18, 236
Hazel, 183
Hedges, 188.
Height of trees, to take, 163
Heriots, 338
Hide-bound oaks, 104
Highway rates, 30, 365
Hints on hedges, 193
Hipped roof, 297
Hollow walls, 271
Holly, 187, 203
Home farm, 210
Honeydew, 129
Hops, 55, 244
Hornbeam, 136, 203
Horse chestnut, 117
Horses, 225
    food, 226
    health of, 226
Hours of feeding fat stock, 219
House tax, 364
Husbandry, good, implied, 46

I.

Igneous rocks, 275, 278
Impeachment of waste, 344
Implements, 260
Impounding goods, 361
Improvement, A. H. Act, 384
    rates, 365
Improvements, Acts relating to, 351
Improvements, works of, by tenant-for-life, 351
Improvements, unexhausted, 53
Inspection of books, 309
Insurance, 42, 369

J.

Joint occupation, 81
Journal, 308

K.

Kiln, lime, 286
    brick, 292

L.

Labour book, 309
Labourers, 214
Laburnum, 138
Lady-day valuations, 81
Lambing, 223
Land agent's relation to home farm, 210

Landlords and farmers, 1
Land tax, 32, 364
Larch, 141
Layering, 181
Laying down for pasture, 54, 239
Lease, agreement for a, 21
    by tenant for life, 350
    divisions of, 23
    mining, 347
    renewal of, 12
    schedule to, 13
    stamps, 22
    when no deed is necessary, 14
Leases, and rates and taxes, 363
Ledger, 309
Legal assistance, 5
Lessees' covenants, 8, 16, 24, 29
Lias, 277
Libocedrus decurrens, 155
Lime, quick, 286
    kilns, 286
Limestones, 281
Lime tree, 126
Lime wash, 8
Liming of land, 53, 62
Limit of settlement, 342
Lincolnshire custom, 66
London clay, 276, 285
Lotting timber, 167
Lots, value of, 167

M.

Magnesian limestone, 282
Malm rock, 284
Manorial system, 336
Manures, artificial, 233
    waste products, 234
Maple, 128, 186
Marble, Purbeck, 283
Marling of land, 53, 58
Marl, 58
Market value of hay and straw, 79
Masting, 117
Material, to supply, 12, 18
    haulage of, 42
Measurement of sawn timber, 160
    of planks, 161
    of timber, 157
    rule for, 157
    sliding rule for, 164
Michaelmas valuations, 75
Middlemen, 213
Milk register, 216
    quantity per cow, 217
Minerals, 347
Mixtures, seed, 241
Mortar, 288
Mountain ash, 138

N.

Needle, timber, 163
New erections, 268
New red sandstone, 277
Norfolk Chamber of Agriculture, 67
Notice to quit, 354, 430
    example of, 354
Nursery, 151
Nurses for oak, 100

O.

Oak, 98, 186
    coppice, 100
    natural reproduction of, 100
    planting of acorns, 101
    uses of, 104
    weight of, 109
    value of, 109
Objectionable tenant right, 85
Oolite, 277, 282
Ornamental conifers, 155
Osier beds, 52
Osiers, 134
Outgoing tenant, liabilities of, 42

P.

Paint, to, 8, 16
Park paling, 195
Pastures, permanent, 239
    temporary, 243
    not to break up, 10, 17
    treatment of young, 243
Pay, to, for unconsumed hay and straw, 12. 18
    tillage, 12, 18
Penal rent, 7, 16, 23
Personal liability of agent, 432
Pigs, 229
Pine, Scotch, 146
    varieties of, 149
    Austrian, 150
    pinaster, 149
    Weymouth, 150
    specific character of, 150
Plane tree, 130
Planting thorn, 191, 200
Plants for fences, 200
Plaster of Paris, 289
Plastic clay, 285
Poachers, 10, 17
Poor-rate, 30, 364
Poplar, 122, 187
Portland cement, 289

Post and rail fence, 194
Poultry, 229
Power to view state of repairs, 42
Pozzuolana, 288
Private sale, 174
Property in fences, 373
Property in timber, 346
Property tax, 30, 363
Proportion of bark to timber, 108, 437
Pruning, 101
Puccinia graminis, 304
Purchased foods, 49, 62
    manures, 53
Purchases, 431

Q.

Quiet enjoyment, 11
Quit rent, 338

R.

Rain water, 269
Ram-breeding, 222
Rates and taxes, 8, 16, 30, 75, 363
Razing knife, 163
Reclaiming waste land, 52, 56
Reddendum, 7, 23
Re-entry, 12, 18, 24, 363, 402
Registration of cattle, 261
Relief against forfeiture, 363
Remainderman, 341
Rent, lessee's covenant to pay, 8, 16, 24, 29
    payment of, 362
    proportion on re-entry, 8
    remedies other than distress, 362
Repairs, 8, 16, 24, 41, 267, 366
    landlord's liability, 366
    tenant's liability, 366
Replevy, to, 362
Retintosporas, 155
Rides through woods, 209
Roman cement, 288
Root crops, value of, 77
Rule, sliding, 164
Rules for ascertaining areas, 296

S.

Sainfoin, 79, 404
Sale of timber, 167
    by auction, 167
    by tender, 173
    conditions, 171
    of underwood, 177
Sale, private, 174
    publicity of, 168
    settlement of, 169
Sales, 430
Sales by tenant for life, 350
Salt, application of, 304
Sand, 292
Sandstones, 280
Sanitary arrangements, 271
Sawing, cost of, 160
Scales of valuation, 66
Scotch fence, 195
Scotch pine, 146
Secondary deposits, 276
Seeds, 83, 235
Selection of ewes, 222
    of sheep for exhibition, 222
Septaria, 285
Sequoia gigantea, 156
    sempervirens, 156
Settled land, 341
    Estates Act, 343
    Land Act, 343
        and timber, 347
Sewers rates, 364
Sheep, 221
    food, 224
    shearing, 225
    washing, 225
Shepherd, 221
Sienite, 279
Signature by agent, 432
Silver fir, 153
Slats, 279
Sliding rule, 164
Sloe, 187
South Wilts Chamber of Agriculture, 68
Spruce fir, 150
Stamp duties, 71, 359
Store stock, 220
Strainers, 197
Strasburgh turpentine, 154
Stratified rocks, 276
Straw and hay, 79
Sub-agents, 432
Sweet chestnut, 119, 185
Sycamore, 128

T.

Tanks, 269
Taskwork, 216, 309
Tenancy at will, 353
    by contract, 354
    by law, 353
    for years, 356
    from year to year, 354

Tenant for life, 342
    and timber, 344
Tenant right, 381
Tertiary deposit, 276, 285
Thuja, 155
Tiles, 294
Tillages, 73
Tilletia caries, 303
Timber, what is, 114, 345
Timber for repairs, 347
Tithe rent-charge, 33
    extraordinary, 38
        Redemption Act, 40
Top dressing, 263
    experiments, 262
Transactions with agents, 426
Trap rocks, 279
Tritoma grandiflora, 208
Tulip tree, 138
Tylenchus tritici, 301

U.

Umpire, 72
Umpire's fee, 72
Underletting, 669
Underwood, 176
Uredo linearis, 304
Ustilago carbo, 303

V.

Valuation, 69, 216
    forms of, 91, 96
    Lady-day, 81
    Michaelmas, 75
    of growing corn, 76
    of root crops, 77
    of timber lots, 167
Value of farmyard dung, 80
    hay, 79
    roots, 77
    straw, 79
    underwood, 179
  and prices of tillages, 74, 125
    of ash, 114
Value of beech, 117
    horse chestnut, 121
    larch, 148
    oak, 109
    poplar, 123
    Scotch pine, 148
    Spanish chestnut, 120
    sycamore, 130
    walnut, 121
Valuer's appointment, 71
Ventilation, 227, 271
Voluntary waste, 344

W.

Waiver of forfeiture, 363
Walls, dry and sod, 197
Walnut, 120
Waste in respect of fences, 372
        minerals, 371
        pasture, 372
        trees, 371
    equitable, 349
    impeachment of, 349
    permissive, 348
    voluntary, 3, 344
Water supply, 269
Water on hill farms, 269
Wealden, 277, 283
Weight of ash, 114
    beech, 117
    cattle by measurement, 88
    elm, 112
    farmyard dung, 80
    hay by measurement, 86
    larch, 146
    oak, 109
Willow, 132, 187
    goat, 133
    propagation of, 134
    pruning of, 133
    soils adapted, 132
    uses of, 134
    weeping, 135
Wire fence, 196
Wool, 225

A

Catalogue of Books

PUBLISHED BY

HORACE COX,

WINDSOR HOUSE, BREAM'S BUILDINGS, LONDON, E.C.

ANGLING.

Angling. By the late Francis Francis. Second Edition. Large post 8vo., price 5s., by post 5s. 3d.

A Mixed Bag. A Medley of Angling Stories and Sketches. By "Red Spinner." A Pocket Book for Anglers and Ramblers. In crown 12mo., buckram, 2s. 6d.; paper covers, 1s. 6d.

British and Irish Salmonidæ. By Francis Day, C.I.E., F.L.S., and F.Z S. With 12 Coloured Plates and many Woodcuts. In 1 vol., imperial 8vo., cloth, price 1 guinea, by post 21s. 6d.

Making a Fishery. By Frederic M. Halford. Also an Edition de Luxe, in imperial, each copy signed and numbered, limited to 150 copies, on hand-made paper, bound in morocco, rough edges, gilt tops, price 25s. The copies will be allotted in the order of application. Demy 8vo., bound in cloth, price 7s. 6d., cut edges, and gilt tops, by post 7s. 10d.

Practical Letters to Sea Fishers. By John Bickerdyke. With numerous Illustrations, price 7s. 6d.; by post 7s. 10d.

The Angler's Diary and Tourist Fisherman's Gazetteer contains a Record of the Rivers and Lakes of the World, to which is added a List of Rivers of Great Britain, with their nearest Railway Stations. Also Forms for Registering the Fish taken during the year; as well as the Time of the Close Season and Angling Licences. By I. E. B. C. Published Annually. In post 8vo., price 1s. 6d., by post 1s. 8d.

The Fishes of Great Britain and Ireland. By Francis Day, F.L.S., F.Z.S., &c. In two vols., imperial 8vo., cloth, price 2 guineas, by post £2 3s. 6d.

The Practical Management of Fisheries. A Book for Proprietors and Keepers. By the late Francis Francis. In post 8vo., with Illustrations, price 3s. 6d., by post 3s. 9d.

ARCHERY.

The Archer's Register. Edited by H. Walrond. Published annually. Price 5s. net, by post 5s. 4d.

CHESS.

Chess Openings. By JAMES MASON. Price 2s. net, by post 2s. 3d.

Social Chess. A Collection of Short and Brilliant Games, with Historical and Practical Illustrations. By JAMES MASON. Price 2s. 6d. net, by post 2s. 9d.

The Art of Chess. BY JAMES MASON. New and Second Edition. Price 6s. net, by post 6s. 4d.

The Principles of Chess in Theory and Practice. By JAMES MASON. Third Edition. Crown 8vo., limp cloth, 2s. 6d. net.; by post 3d. extra.

COOKERY.

Anglo-Indian Cookery at Home: A Short Treatise for Returned Exiles. By the Wife of a Retired Indian Officer. Crown 8vo., price 1s. net.

Fast Day and Vegetarian Cookery. By E. M. COHEN and S. BEATY-POWNALL. Crown 8vo., cloth boards, price 2s. net.

Gleanings of Cookery: Including over 150 quite Original and Unpublished Recipes. By a Mother and Daughter. Price 2s. 6d. net.

The "Queen" Cookery Books. By MRS. BEATY POWNALL. Now Ready: 1. Soups, 2. Ices, 3. Pickles and Preserves, 4. Entrées, 5. Meat and Game, 6. Sweets (Part I.), price 1s. each. These will be followed by: Savouries and Breakfast Dishes, Vegetables, Cakes and Biscuits, Household Hints.

COURSING.

The Coursing Calendar. Published three times yearly—Spring, Autumn, and Winter Seasons. Edited by B. C. EVELEGH ("Allan-a-Dale.") Price 5s., by post 5s. 3d.

The Greyhound Stud Book. Published annually (September) under the authority of the National Coursing Club. Compiled by W. F. LAMONBY (Keeper of the "Stud Book"). Price 5s., by post 5s. 6d.

GAMES.

Laws of Croquet and Implements, &c. Price 6d.

Rules of the Game of Hockey and of the Hockey Association. Price 2d., by post 3d.

GOLF.

The New Rules of Golf. As adopted by the Royal and Ancient Golf Club of St. Andrews. Published annually. Price 6d.

The Golfing Annual. Edited by D. S. DUNCAN. Published annually. Crown 8vo., considerably enlarged, price 6s., by post 6s. 6d.

HUNTING.

Fifty Years' Fox-hunting with the Grafton and other Packs of Hounds. By JOHN MALSBURY KIRBY ELLIOTT. Edited by his son, Edward Kirby Elliott. Price 10s. 6d. net, with Illustrations.

Hare Hunting. By "TINTARA." (A Master of Harriers.) Crown 8vo., price 2s. 6d., by post 2s. 8d.

MISCELLANEOUS.

An Australian in China: Being the Narrative of a Quiet Journey across China to British Burma. By G. E. Morrison, M.B.C.M. Edin., F.R.G.S. Demy 8vo., with Map and Illustrations, price 10s. 6d.

Cottage and Country Buildings. Designed by Thomas W. Cutler, F.R.I.B.A. Forty-three full-page designs, with descriptive letterpress. Bound in vellum, imperial 8vo. oblong, bevel boards, price £1. 1s., by post 1s. extra.

Estate Management: A Practical Handbook for Landlords, Agents, and Pupils. By Charles E. Curtis. With a Legal Supplement by a Barrister. Fifth Edition. In demy 8vo., price 10s. 6d., by post 11s.

Gipsy Tents, and How to Use them. A Handbook for Amateur Gipsies. By G. R. Lowndes. Crown 8vo., profusely Illustrated, price 2s. 6d., by post 2s. 9d.

Old English Embroidery: Its Technique and Symbolism; or, Ecclesiastical and Domestic Embroidery of the Middle Ages: Its Technique and Symbolism. By Frances and Hugh Marshall. Crown 4to., with Illustrations, price 10s. net, by post 10s. 6d.

Physical Training at Home. By A. Alexander, F.R.G.S. (Principal of the Southport Physical Training College. With an introduction by Lord Charles Beresford, R.N. In crown 8vo., Illustrated, price 2s., by post 2s. 2d.

Poultry for the Table and Market versus *Fancy Fowls.* With an Exposition of the Fallacies of Poultry Farming. By W. B. Tegetmeier, F.Z.S. Third Edition. Demy 8vo., Illustrated, price 2s. 6d., by post 2s. 8d.

Texan Ranch Life; with Three Months through Mexico in a "Prairie Schooner." By Mary J. Jaques. Royal 8vo., cloth, profusely Illustrated, price 12s. 6d. net.

The Cottager's Manual of Poultry Keeping. Being Chapters from the Second Edition of W. B. Tegetmeier's "Poultry for the Table and Market." Price 6d., stiff covers.

The Country House. A Collection of Useful Information and Recipes. Adapted to the Country Gentleman and his household, and of the greatest utility to the housekeeper generally. By I.E.B.C. Third Edition, Enlarged and Revised. Large post 8vo., with Illustrations, price 5s., cloth, by post 5s. 4d.

The "Field" Duplicate Judging Book. Price 6d., by post 7d.; or 2s. 6d. the half dozen, by post 2s. 11d.

The Kennel Club Stud Book: Containing a Complete Record of Dog Shows and Field Trials, with Pedigrees of Sporting and Non-Sporting Dogs. Published Annually in July. In large post 8vo. Price 10s. 6d., by post 10s. 10d. each.

The Practical Surveyor: A Treatise upon Surveying. Specially Arranged for the Guidance of Pupils, Stewards, the Scholastic profession, and Intending Emigrants. By Thomas Holloway. Second Edition. Demy 8vo., Illustrated, price 3s. 6d., by post 3s. 9d.

Rabbits for Profit and Rabbits for Powder. By R. J. Lloyd Price. Third Edition. Price 2s. 6d., by post 2s. 8d. in limp cloth.

NATURALIST.

Hints on the Management of Hawks. By J. E. HARTING. Second Edition. With numerous additions and Illustrations, to which is added Practical Falconry. Chapters historical and descriptive. Price 10s. 6d. net, by post 10s. 10d.

Horses, Asses, Zebras, Mules, and Mule Breeding. By W. B. TEGETMEIER, M.B.O.U., F.Z.S., and C. L. SUTHERLAND, C.I.E., F.Z.S. In demy 8vo., price 5s. net, by post 5s. 4d.

Horse Breeding Recollections. By COUNT G. LEHNDORFF. Royal 8vo., price 10s. 6d., by post 11s.

Pheasants. Their Natural History and Practical Management. By W. B. TEGETMEIER, F.Z.S. Illustrated with numerous full-page engravings drawn from life by J. G. Millais, F. Frohawk, T. W. Wood, J. Smit, &c. Third Edition, greatly enlarged. Royal 8vo., bevelled boards, gilt edges, price 7s. 6d., by post 7s. 9d.

The Cattle, Sheep, and Pigs of Great Britain: Being a Series of Articles on the various Breeds of the United Kingdom, their History, Management, &c. Edited by the late JOHN COLEMAN. Cheap Edition. With Illustrations from the original drawings by Harrison Weir, in 1 vol., price 12s. 6d., by post 13s.

The Migration of Birds: An Attempt to reduce Avine Season-flight to Law. By CHARLES DIXON. Price 10s. 6d., demy 8vo., cloth boards, with coloured maps.

A History and Description of the Collie or Sheep Dog in his British Varieties. By RAWDON B. LEE. A few copies on large paper, price 10s. 6d., by post 11s. Demy 8vo., printed on plate paper, with Illustrations by Arthur Wardle, price 3s. 6d., by post 3s. 11d.

NOVELS.

At Heart a Rake. By FLORENCE MARRYAT. Second Edition. Crown 8vo., price 6s.

For His Country's Sake; or, Esca, A British Prince at the Court of Trajan. By L. M. P. Black. Now Ready, Cheap Edition, crown 8vo., with Illustrations, price 3s. 6d.

SHOOTING.

The Rules of Pigeon Shooting. Published by special permission. The Hurlingham Club and the Gun Club Rules of Pigeon Shooting. Bound together in cloth, gilt edges, price 6d., by post 7d.

The Theory and Practice of Target Shooting: Including a Series of Practical Hints on the Use of Military and Match Rifles, a Description of the Effects of Different Atmospheric Conditions, and Instructions in the Use of Various Aids to Rifle Shooting. By ARTHUR GLYNDWR FOULKES, M.A. Demy 8vo., with numerous Plates, price 10s. 6d., by post 11s.

The Modern Sportsman's Gun and Rifle. Including Game and Wildfowl Guns, Sporting and Match Rifles, and Revolvers. In Two Volumes. Vol. I.—Out of Print. Vol. II.—The Rifle and Revolver. By the late J. H. WALSH ("Stonehenge"), Editor of the "Field." Demy 8vo., price 15s. each, by post 15s. 6d. each.

SKATING.

A Handbook of Bandy; or Hockey on the Ice. By Arnold Tebbutt. With diagrams, paper cover, 1s., in cloth 1s. 6d.

A System of Figure Skating. Being the Theory and Practice of the Art as Developed in England. By T. Maxwell Witham. Cheap Edition. Illustrated by 256 Diagrams, in crown 8vo., price 2s. net, by post 2s. 3d.

On the Outside Edge: Being Diversions in the History of Skating. By G. Herbert Fowler. 72 pp., one Plate; price 2s. 6d. net.

Principle of Skating Turns. By H. C. Lowther. Price 1s.

SPORT.

Breeding Racehorses by the Figure System. Compiled by the late C. Bruce Lowe. Edited by William Allison. With numerous Illustrations of Celebrated Horses. Crown 4to., cloth boards, price 31s. 6d.

Present-Day Sires and the Figure System. One Hundred and Fifty Pedigrees of Horses now at the Stud. By G. H. Dawkins. Crown 8vo., cloth, price 6s., by post 6s. 3d.

Fifteen Years' Sport and Life in the Hunting Grounds of Western America and British Columbia. By W. A. Baillie-Grohman. With a chapter by Mrs. Baillie-Grohman. Illustrated by seventy-seven photographs, including the best trophies of North American big game killed by English and American sportsmen, with table of measurements and notes. With three specially prepared Maps of the North-West Coast of the United States, British Columbia, and the Kootenay District. Price 15s. net, with Maps and Illustrations.

Essays on Sport and Natural History. By J. E. Harting. 8vo., pp. 463, with 32 Illustrations, price 10s. 6d., by post 11s.

Art of Wildfowling. By Abel Chapman, F.Z.S. With thirty-six Illustrations by the Author and three by Chas. Whymper. Demy 8vo., price 10s. 6d., by post 11s.

Sporting Days in Southern India. Being Reminiscences of Twenty Trips in Pursuit of Big Game, Chiefly in the Madras Presidency. By Lieut.-Col. A. J. O. Pollock, Royal Scots Fusiliers. With numerous Illustrations by Whymper and others. Royal 8vo., price 16s. net, by post 16s. 6d.

Sporting Guns and Gunpowders: Being a Selection from Reports of Experiments, and other articles, published in the "Field" Newspaper, with reference to Trials of Guns and Explosives, and the apparatus for testing them. Illustrated with Numerous Diagrams. Compiled by the Editor of the "Field." Published in 2 parts, in demy 4to. Price 5s. each.

The "Queen" Cycling Book. By Basil Crump, of the Middle Temple, Barrister-at-Law, assisted by Mrs. A. Grafton, with a Preface by the late F. Octavius Crump, Q.C., Editor of the "Law Times." Price 1s.

The Rowing Almanack and Oarsman's Companion. Edited by E. D. Brickwood. Published annually. Price 1s., by post 1s. 1d.

The Sporting Division of the Modern Dogs of Great Britain and Ireland. By Rawdon B. Lee. Profusely Illustrated in Collotype, from Drawings by Arthur Wardle. Second Edition. In Two Volumes. Demy 8vo., price 21s. net, by post 22s.

SPORT (*continued*).

The Non-Sporting Dogs and the Terriers: Being the Concluding Divisions of Modern Dogs of Great Britain and Ireland. By RAWDON B. LEE. Profusely Illustrated in Collotype from Drawings by ARTHUR WARDLE and R. H. MOORE. In two vols., price 10s. 6d. each net, by post 11s.

The Sportsman's Vade-Mecum for the Himalayas. Containing Notes on Shooting, Camp Life, &c. By K. C. A. J. Fully Illustrated. Demy 8vo., price 2s., by post 2s. 2d.

TENNIS.

Lawn Tennis Score Book (the Improved "Pastime.") Price 6d., by post 8d.

The Laws of Lawn Tennis. Issued under the Authority of the Lawn Tennis Association. Official Edition. Price 6d., by post 7d.

The Lawn Tennis Handbook. Published annually. Price 1s., post free 1s. 2d.

TRAVEL.

The Coasts of Devon and Lundy Island: By JOHN LLOYD WARDEN PAGE. The book is illustrated with twenty-one Vignettes, by Mr. Alexander Ansted, taken in many cases from sketches by the author. Crown 8vo., with Map and 21 Illustrations, price 7s. 6d., cloth, by post 6d. extra. Large paper copies, 250 only, with Proofs of the Illustrations, Roxburghe, 12s. 6d.

YACHTING.

A Manual of Yacht and Boat Sailing. By the late DIXON KEMP, A.I.N.A. Ninth Edition. Revised and partly Re-written by B. Heckstall-Smith, A.I.N.A. In super-royal 8vo., with more than 120 plates, price £1 5s. net, by post 1s. 6d. extra.

A Yacht Racing Record: Being some Reminiscences of WILLIAM O'NEILL, Captain Yacht "Iverna." Edited by CHARLES BESLEY. Crown 8vo., cloth, price 2s. 6d.

Yacht Architecture. By the late DIXON KEMP, A.I.N.A. Third Edition. In 1 vol., super-royal 8vo., price £2 2s. net. Can also be had in 2 vols., letterpress, royal 8vo., plates, royal 4to., price £2 7s. 6d. net, by post 1s. 6d. extra.

Navigation for Yachtsmen: A Concise Treatise on Navigation and Nautical Astronomy. Compiled by VINCENT JOHN ENGLISH, retired Lieutenant R.N. Illustrating the most modern methods, and specially designed for the use of yachtsmen. Demy 8vo., price 15s. net, by post 15s. 6d.; with Illustrations and Charts.

THE QUEEN,

The Lady's Newspaper and Court Chronicle.

PUBLISHED EVERY WEEK, PRICE 6d., BY POST 6½d.

THE QUEEN is the Oldest Established Lady's Newspaper, and the Great Organ of the Upper Classes. "The Queen" contains the latest and best PARIS and other FASHIONS, with Descriptions of the NEWEST WORK; it circulates all over the World, and is patronised by the ROYAL FAMILY, NOBILITY, and GENTRY. "The Queen" is unrivalled in its attractions as a record of that which is fashionable, elegant, and ornamental, and is useful as a guide and companion in the household and domestic circle.

"The Queen" is therefore the most valuable medium for advertising either SITUATIONS WANTED or VACANT.

CONTENTS:

LEADERS on Interesting and Current Topics.
FASHIONABLE ARRANGEMENTS, ENTERTAINMENTS, BALLS, &c.
FASHIONABLE MARRIAGES.
UPPER TEN THOUSAND.
NOTES ON MUSIC AND MUSICIANS.
DRAMA.
TOURIST.
STUDIO.
ETIQUETTE.
WOMEN'S EMPLOYMENT.
WOMEN.
COLOURED SHEETS OF THE LATEST PARIS FASHIONS, First Week in each Month.
PERSONAL.
WORK TABLE, BAZAARS, AND SALES.
CHARITY.
CUISINE.
RECIPES OF ALL KINDS.
PASTIMES.
THE LIBRARY: comprising Reviews of all the New Novels and other Books likely to interest Ladies.
COURT NEWS fully and promptly reported.
BIOGRAPHIES and PORTRAITS of PERSONS distinguished for their talents or their social position; comprising Authoresses, Artists, Actresses, Ladies of Rank, &c.
HOME DECORATION: the Art of Furnishing
THE EXCHANGE.

NOTES and QUERIES, and ANSWERS to NOTES and QUERIES, are inserted under each department of the paper, thus opening to readers a medium of intercommunication and information on each and every of the subjects treated of in "THE QUEEN."

⁂ Lady Readers are invited to communicate freely to the Editress their suggestions, hints, experiences and observations. All will have a fair hearing in the columns of "THE QUEEN."

Yearly Subscription, Foreign Countries, post free, 39s.; *Six months,* 19s. 6*d.*; *Three Months,* 9*s.* 9*d.*

Yearly Subscription, Great Britain, post free, £1 8s.; Six Months, 14s. Three Months, 7s.

OFFICES: WINDSOR HOUSE,
BREAM'S BUILDINGS, LONDON, E.C.

THE FIELD,

THE FARM, THE GARDEN,

The Country Gentleman's Newspaper.

PUBLISHED EVERY SATURDAY, PRICE SIXPENCE.

THIS paper is devoted entirely to the interests of Country Gentlemen, and, next to the *Times*, is the Largest and most Influential Paper in Great Britain. The subjects are treated in the fullest manner by the first writers of the day, and comprise:—

SHOOTING.
CRICKET.
VETERINARY.
FARM.
PASTIMES.
BEE-KEEPING.
ACCLIMATISATION.
FISHING.
RACING.
WILD SPORTS.
GARDEN.
WHIST.
POULTRY.
PISCICULTURE.
HUNTING.
YACHTING.
STABLES.
COUNTRY HOUSE.
CHESS.
PIGEONS.
TRAVEL.
COURSING.
ROWING.
KENNEL.
ATHLETIC SPORTS.
DRIVING.
NATURAL HISTORY.
LAWN TENNIS.
&c., &c., &c.

All the Subjects are, where thought advisable, carefully Illustrated in the best manner possible.

"THE FIELD" gives an additional interest to Country Gentlemen, Sportsmen, Naturalists, and others, as it is the Established Medium for ADVERTISEMENTS of the following matters:—

Shooting, Fishing, and Hunting Quarters.
Estates and Farms for Sale or to Let.
Poultry and Pigeons.
Gamekeepers, Bailiffs, Gardeners, and other Servants.
Yachts for Sale and to Let.
Horses and Carriages for Sale.

Dogs, Stud Horses, Stud Dogs, Farm Implements, Farm Seeds, Garden Seeds, New Books, Hotels, House-keeping, and Miscellaneous Articles.

Subscription to Australia: Yearly, £1 16s. 8d.: Six Months, 18s. 4d.; Three Months, 9s 2d.

PUBLISHED BY HORACE COX, WINDSOR HOUSE, BREAM'S
BUILDINGS, LONDON, E.C.